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October 10, 1960

RAILWAY AGE *weekly*

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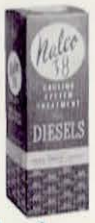

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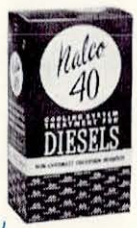

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Nalco 38 is an easy-to-use pellet form corrosion inhibitor formulated from carefully selected chromates, plus buffering agents to maintain the proper pH range in the cooling water. Pellet form treatment cuts dust and handling hazards to a minimum. In solution, Nalco 38 forms a tough, corrosion resistant film on metal surfaces, and does not harm rubber and other non-metallic components of the cooling system.

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Nalco 39 is a combination of boron, nitrogen, and organic materials, along with pH adjusting and buffering chemicals, which gives effective corrosion control in diesel cooling systems by forming a corrosion resistant film on treated surfaces. It protects metals in the system, is harmless to non-metallic parts . . . and contains no chromates. All three forms of Nalco 39 treatment are compatible with antifreeze solutions.

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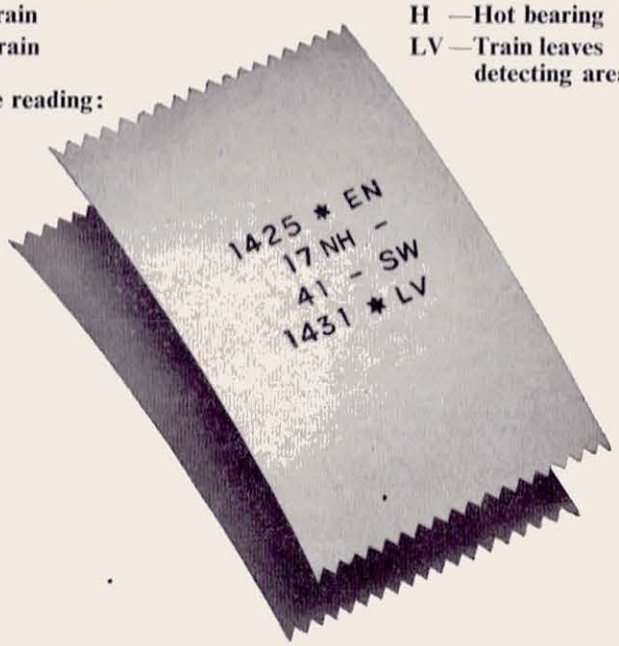
The UNION Hot Bearing Detector operates in less than one microsecond. This speed makes possible accurate readings at all train speeds. And any dangerous or abnormal condition is recorded immediately on a readout tape that's so simple a schoolboy can read it. It shows simple abbreviations and digital time: 0001 to 2400, one minute past midnight to the following midnight. The abbreviations include:

EN—Train enters detecting area
S —South side of train
N —North side of train
W —Warm bearing
H —Hot bearing
LV—Train leaves detecting area

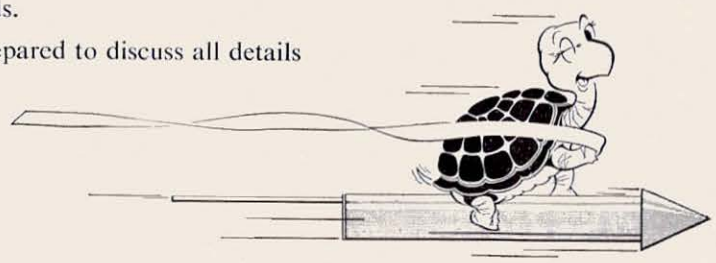
Here's a sample tape reading:



The top line shows that the train entered detecting area at 2:25 P. M.
2nd line: 17th car from head end has hot bearing on north side.
3rd line: 41st car from head end has warm bearing on south side.
4th line: Train exits at 2:31 P. M.

The UNION Hot Bearing Detector gives accurate temperature measurements for both roller and friction bearings at all train speeds, without human interpretation. Only one set of equipment is needed to check traffic moving in either direction. It determines whether the bearing needs immediate attention, or whether the temperature is below the danger point, but warmer than normal. It can be maintained and adjusted at any time with ordinary test instruments. It can transmit information over any standard communication channel—direct wire, carrier, or microwave. Its accuracy is unaffected by supply voltage fluctuations and it can operate from commercial power sources. All this, and it's built to rugged railroad standards.

Your Union Switch & Signal representative is prepared to discuss all details at your convenience. Call him, or write today.



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RAILWAY AGE *weekly* October 10, 1960 • Vol. 149, No. 15

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Erie-Lackawanna: Court next? ..... p. 9

RLEA is planning a suit to block the merger of the DL&W into the Erie, scheduled to become effective Oct. 17. The labor leaders think the suit is essential to get what they consider more adequate labor-protection conditions than were imposed by the ICC decision.

Cover Story—New yard controls cut costs p.22

Applying the tools of scientific management to terminal operations was one theme of last week's meeting of the Railway Systems & Procedures Association. Here's the latest word on studies aimed at improving the design and operation of terminal systems.

Cover Story—NYC opens 'Big Four' yard p.30

The $11-million facility at Indianapolis makes liberal use of the latest electronic devices. Some 3,000 cars a day can be classified there. The yard, it is said, will cut 24 hours off a car's time from the Mississippi to the Atlantic seaboard.

Automation speeds butt-welding of rail p.40

The Linde Co. has announced improvements to its butt-welding equipment that reduce welding time and cut manpower requirements by 60%.

C&IM saves with Cobra shoes p.42

The road says composition shoes on its locomotives are lasting four times longer than cast-iron shoes. In addition, flat spots and thermal cracking of wheels have been eliminated.

HOTBOX DETECTORS

How crews are instructed to use them p.14

What are train crews and operators told to do after a hotbox is indicated by a detector? Are trains always stopped for inspection by the crew? Railway Age put these questions to several detector-owning railroads. Here are five representative answers.

Who handles detector maintenance? p.14

Most detector maintenance on U. S. railroads is handled by signal maintainers, a Railway Age survey indicates. On some roads, maintenance is the responsibility of the communications department; on others, signal and communications forces do the work.

A+ Adlake® electric lanterns invite comparison from any angle

Bail is designed for easy handling . . . greatest durability. Neoprene cover resists oils, insulates for use on electric lines. Bail holds firmly in signaling position but can be moved for positioning on arm. Retains tension for life of lantern.

One-piece steel body is drawn into shape, then reinforced at lower end by bottom guard. Inside of cap is fitted with clip to take spare bulbs.

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Week at a Glance CONT

Current Statistics

Operating revenues	
7 mos., 1960	$5,647,350,460
7 mos., 1959	5,846,964,866
Operating expenses	
7 mos., 1960	4,468,305,006
7 mos., 1959	4,562,546,451
Taxes	
7 mos., 1960	616,918,640
7 mos., 1959	632,589,611
Net railway operating income	
7 mos., 1960	354,373,380
7 mos., 1959	462,418,217
Net income estimated	
7 mos., 1960	248,000.000
7 mos., 1959	339,000,000
Carloading revenue freight	
38 wks., 1960	22,647,026
38 wks., 1959	22,845,712
Freight cars on order	
Sept. 1, 1960	23,866
Sept. 1, 1959	37,172
Freight cars delivered	
8 mos., 1960	39,419
8 mos., 1959	27,435

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Short Lines elect Huntley p.44

The 47th Annual National Convention of the American Short Line Railroad Association last week chose C. E. Huntley to succeed James M. Hood as president.

Automation aired by RSPA p.46

Automation and work simplification—as applied principally to terminal operation problems—were the keys to last week's fact-packed autumn meeting of the Railway Systems and Procedures Association in Chicago.

The Action Page—You can't kid the profs p.50

A program of contact with colleges has been initiated by top officers of the five operating unions. This could be of great value to the unions and, in the long run, to management-union relations.

Short and Significant

Merger case . . .

involving the proposed consolidation of the Seaboard Air Line and Atlantic Coast Line has been referred by the ICC to Examiner H. J. Blond for public hearing Nov. 28 at Richmond, Va. It was Examiner Blond who handled the Erie-Lackawanna case, making the proposed report which the Commission adopted in making its favorable decision on that merger.

New York Central shareholders . . .

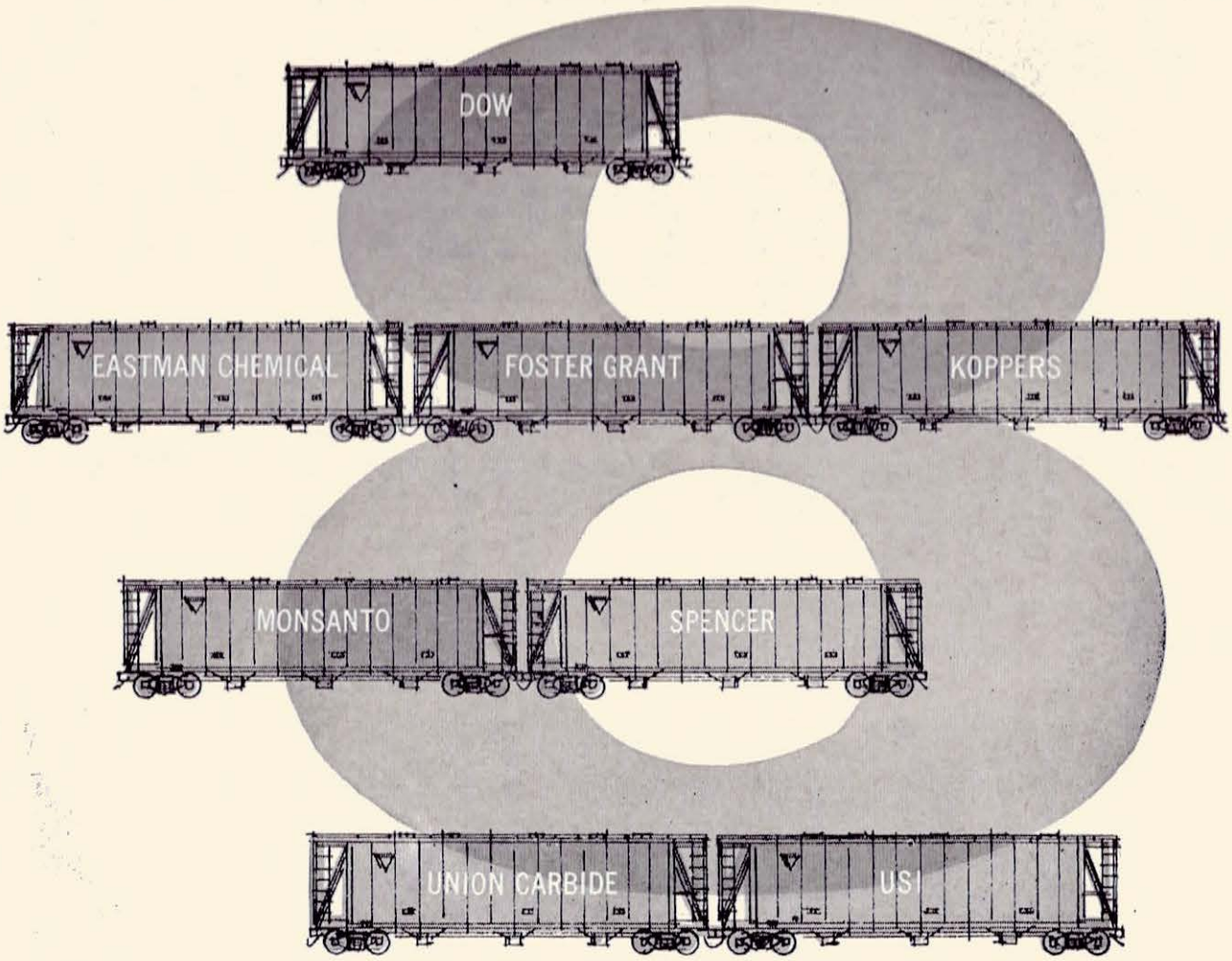
have approved the road's proposal to acquire up to 1,550,000 shares of B&O common stock. NYC's stock-exchange offer to B&O shareholders (1.5 shares of NYC stock, plus $9, for each B&O share) has been extended to Dec. 14. Meanwhile, NYC and B&O have begun joint merger studies which they expect to complete in "about four months." NYC President A. E. Perlman said last week that the two roads "have left the door open" in case the C&O changes its mind and asks to join in the studies (RA, Sept. 19, p. 10).

Government guarantees of loans . . .

of $6,000,000 and $5,000,000 are sought by the New Haven and Lehigh Valley, respectively, in applications filed with the ICC. So the Commission will resume its loan-guaranty activities which were halted with the recent clearance of the docket (RA, Oct. 3, p. 34).

New members of NITX specialized car pool . . .

are Florida East Coast, Western Maryland and Monon. They're the 10th, 11th and 12th roads to join the pool which North American Car started last December.



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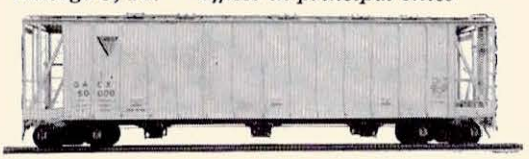

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Erie-Lackawanna: Court Next?

► **The Story at a Glance: Suit to block merger of the Delaware, Lackawanna & Western into the Erie will be filed by the Railway Labor Executives' Association in a bid for what the association considers more adequate labor-protection conditions than the ICC attached to its decision approving the merger.**

The so-called standard labor-protection conditions were imposed by the Commission in its favorable order which is scheduled to become effective Oct. 17 (RA, Sept. 26, p. 9).

The plan to go to court was announced by RLEA Chairman G. E. Leighty at a press conference which followed the association's latest meeting in Washington, D. C. That was on Sept. 30, and Mr. Leighty said the suit would be filed "within the next ten days," which meant by the end of last week or early this week.

A contention that the ICC has failed to observe labor-protection provisions of the Interstate Commerce Act will be the basis of RLEA's suit in the Erie-Lackawanna case.

The contention, which is that the law requires a job freeze, was raised by RLEA for the first time in the present case. In previous cases, as the Commission pointed out, intervening labor unions "acquiesced" in an interpretation to the effect that the law permitted "either employment or compensation of employees displaced in consolidation of carriers."

What RLEA wants, Mr. Leighty said, is a deal like it got in the Norfolk & Western-Virginian case. That was a voluntary arrangement which the RLEA chairman described generally as a plan whereby "every employee was guaranteed a job as long as he wanted it." RLEA considers that settlement a "yardstick" which should be applied in all merger cases.

The labor-protection law in issue came into the Interstate Commerce Act as the Harrington amendment to the Transportation Act of 1940, and it is now in the IC Act's Section 5 (2) (f). It requires the Commission to condition its approval of mergers so that they will not result in affected employees being "in a worse position with respect to their employment" for post-merger periods up to a maximum of four years. This maximum applies to employees who have been in service at least four years, the provision applicable to employees with less service being that their period of protection shall not be greater than the period of their service prior to the merger.

This gave statutory status to, and thus assured continuance of, job-protection arrangements like those entered voluntarily by labor and management four years earlier—in the so-called Washington Job-Protection Agreement of 1936. As summarized by Mr. Leighty, ICC decisions in cases involving job-protection have culminated in standard arrangements to the effect that protection shall be on the basis of the 1940 Act's provisions or the Washington Agreement, whichever is more favorable to affected employees.

The N&W settlement provides all that and "more," Mr. Leighty also said. And that's why RLEA wants it as a pattern in all merger cases. He conceded that the N&W settlement provides that affected employees may be given the "equivalent" of full employment, but he seemed to think the employees were fully protected by the setting in which the severance-pay alternative would be available in that case. He also said that if the principle of the job freeze were established by the court test, the matter of a severance-pay alternative might be something the unions would consider negotiable in specific cases.

That the Commission may have anticipated a court fight on the issue is indicated by the fact that it devoted about one-third of its Erie-Lackawanna report to discussion supporting its rejection of the RLEA contention. The contention was not raised until the case reached the oral-argument stage.

The legislative history of Section 5 (2) (f) supports its interpretation that Congress did not intend to freeze employees in their jobs, the Commission asserted. It found that the legislative history included rejection of a specific job-freeze proposal.

While the Commission conceded that "there is no clear holding on the point" by the courts, it did find decisions which "generally" have favored the interpretation that the section "refers to compensation and not to a job-freeze." Among court decisions cited is a 1950 decision of the United States Supreme Court, in RLEA v. U.S., 339 U.S. 142,155, which, as the Commission put it, "characterized our practice as affording employees 'compensatory protection' and apparently thought it was consistent with the statute."

Also announced at Mr. Leighty's press conference was RLEA's rejection of New Haven President George Alpert's proposal that the employees of that road accept a "10% gross wage deferral for a period of six months." The New Haven president appeared at the RLEA meeting to make a presentation in support of his proposal, and the association's adverse reaction was reported to him in a Sept. 30 letter signed by Mr. Leighty.

The letter expressed the labor leaders' view that "it would be wrong in principle for our organizations in this

(Continued on page 45)

SUNA Members Voting

Switchmen on 17 western roads last week prepared to vote on acceptance of a new wage-benefit offer which carries at least the implied blessing of SUNA's top leadership. President N. P. Speirs said that "under the circumstances" he thinks the proposal will probably be approved. An earlier offer, containing only a wage increase, was overwhelmingly rejected. Now, however, the proposal has been somewhat sweetened—and the union is under a court order restraining a strike.

In addition to a 4% two-step wage boost, the new offer includes liberalized vacation and overtime provisions. President Speirs called it "a better proposal," though one which "does not fully take care of" the alleged inequity cited by the Switchmen as grounds for rejection of the 4% pattern settlement.

Complete returns from the membership vote must be made by Oct. 26.

RR Growth: It's Not 'Guaranteed'

It's going to take more than merely the growth of the nation to bring growth to the railroads, Illinois Central President Wayne A. Johnston warned last week.

In remarks prepared for the annual meeting of the AAR Treasury Division, Mr. Johnston noted that "the statement is frequently made that demand for rail transportation will rise with population increase. . . . If you want to expose the fundamental fault of such reasoning, use the term 'buggy whips' in place of 'rail transportation.' "

Only as the railroads learn what the public wants in transportation and decide to give the public what it wants, will their business increase, IC's president commented. "That means a serious program of market research. [It] can and should be made by the sales departments of the railroads but also by all its officers and all its people. If such a survey also calls for the use of marketing analysts, they, too, should be employed."

Next, he said, railroads "must have the freedom to move, to adjust, to change," if they hope to become a truly growing industry. Railroads have changed, he added—but the change "was not fast enough nor far enough . . . [and] even after a railroad recognizes the need for a change, its hands more often than not are tied in making that change."

Shippers, Mr. Johnston noted, want not one service but many from the transportation agencies they use—and that means creation of transportation companies that will provide the best service.

"There may have been a time," he said, "when we were guilty of thinking the steel wheel was best for every transportation task. If we thought that, we were wrong. It takes other wheels and, indeed, other transportation devices beyond wheels to do the whole job.

"We know that we railroads must be transportation companies first and railroads only incidentally."

And his parting thought: "What makes an industry old or young is the quality of its leadership, not the years it has been in business. We can be as young as the newest branch of electronics. Not only can we be—we have to be and we will be."

Watching Washington *with Walter Taft*

• **AAR BUDGET CUTS,** which will trim the annual budget by 25 to 30%, were ordered by the association's directors at their Sept. 30 meeting. The reductions will become effective Jan. 1.

MILLION-DOLLAR CUT in the budget of the Public Relations Department will mean suspension of all AAR advertising on which more than $800,000 will have been spent this year. There is confidence, nevertheless, that the public relations program won't otherwise be badly hurt—that other required adjustments can be made in ways which will leave the program's major effectiveness unimpaired.

THE DEPARTMENT'S STUDY of how best to make these other adjustments will involve a critical review of all its publications and services, some of which have been maintained for several years. This could result in discontinuance of publications or projects which have become relatively less important than they formerly were.

MAJOR CURTAILMENTS in other departments will involve discontinuance of the Competitive Transportation Division which keeps abreast of developments in water and highway transportation. Also, some activities of the Operations and Maintenance Department will be dropped or consolidated.

• **NEW RENTAL CHARGE** for industry use of railroad cars in plant service has been eliminated from the general rate-increase case—Ex Parte 223. But it's still proposed by eastern railroads in a separate tariff.

THE PROPOSED CHARGE would apply when an industry uses railroad cars for movements in connection with its own plant operations—whether the cars are "ordered or appropriated" for that purpose. Excluded would be cars leased to an industry for 30 days or more.

THE INNOVATION brought adverse shipper reactions, and western and southern roads indicated a disposition to withdraw their concurrences in that item of the Ex Parte 223 tariff. Also, there were reports of ICC staff views to the effect that, because the item published an entirely new charge, it should not be in a tariff which otherwise published only changes in existing rates. Hence the cancellation of the item by Supplement No. 2 to the Ex Parte 223 tariff.

THE SEPARATE TARIFF is Hinsch's ICC C-177, effective Oct. 24. For plant use of railroad cars, it publishes, for eastern roads only, a charge of $7.50 per car per day, and provides that demurrage will not apply while this use charge is applicable. Demurrage charges now range up to $8 per car per day.

HARDEST HIT by the use charge would be big plants, notably those in the steel industry. Informed guesses indicate that the amount involved could be substantial, but the railroads' revenue-yield estimates in Ex Parte 223 were not broken down in a way which showed how much the proposed charge was expected to produce.

Proposed Rate Increases Would Yield Only 2.53%

Freight-rate increases proposed by the railroads in the pending ex parte 223 case would leave the carriers with a 1960 return of only 2.53%. That's shown by the verified statement filed with the Interstate Commerce Commission by Graham E. Getty, assistant director of the Association of American Railroads' Bureau of Railway Economics.

Mr. Getty's was one of several verified statements filed by the railroads to support the proposed increases. Mr. Getty estimated that the annual yield from the increases would be about $147,000,000. He put 1960's net income at $512,700,000 with the increases and at $410,700,000 without them. In the latter situation, the Eastern District roads would have a 1960 net deficit of $46,600,000.

Urges End to Additional Tank-Car Allowances

Additional tank-car allowances paid by the Official Territory railroads since Dec. 1, 1959, on cars carrying alcohols and solvents and sulfuric acid will end if the Interstate Commerce Commission accepts the advice of Examiner R. J. Mittelbronn.

The allowances, originally $14 and $17 per loaded car, were reduced to $12.50 and $15.50 respectively, when the mileage allowance on tank cars was increased from 4½¢ to 5½¢ per car-mile.

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Maintenance personnel are equipped with the necessary meters and given

Proposed Rate Increases Would Yield Only 2.53%

Freight-rate increases proposed by the railroads in the pending ex parte 223 case would leave the carriers with a 1960 return of only 2.53%. That's shown by the verified statement filed with the Interstate Commerce Commission by Graham E. Getty, assistant director of the Association of American Railroads' Bureau of Railway Economics.

Mr. Getty's was one of several verified statements filed by the railroads to support the proposed increases. Mr. Getty estimated that the annual yield from the increases would be about $147,000,000. He put 1960's net income at $512,700,000 with the increases and at $410,700,000 without them. In the latter situation, the Eastern District roads would have a 1960 net deficit of $46,600,000.

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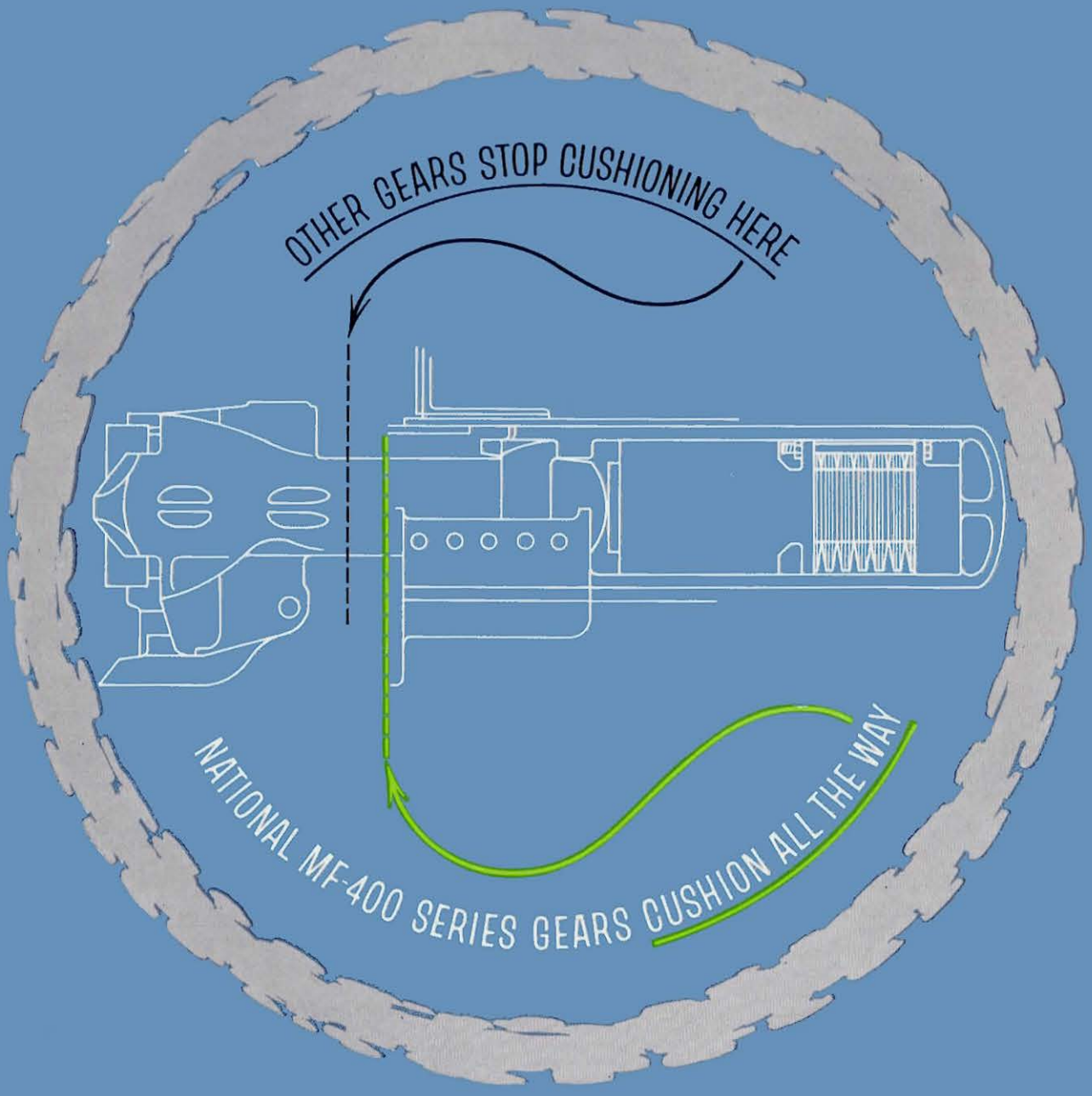

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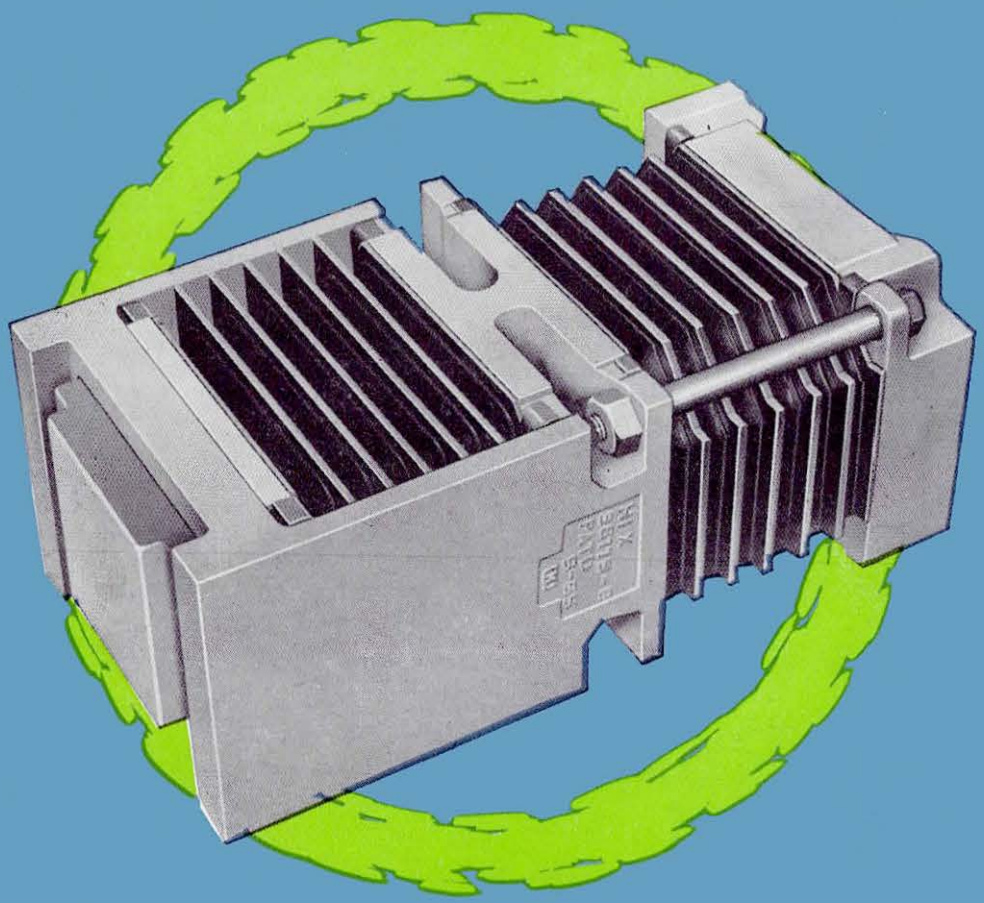

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Use Hotbox Detectors

ing train, it is suggested that when observing eastbound trains on No. 2 track, the operator remove the spring drive on the paper take-up reel for rapid examination of the chart after train passes eastbound home signal."

BOSTON & MAINE—Hotbox detector recorders on this road are at either a dispatcher's office or a wayside tower. When a recorder is first placed in service, the operator is briefed on the pattern peculiarities of certain types of equipment, such as engines, roller bearing cars, flat cars, and effects of the sun, reports J. F. Ness, signal and communications assistant.

Each detector is located approximately five miles in approach to a controlled signal under the jurisdiction of the operator reading the recorder tape. He thus has control over the train by virtue of this signal, if he feels an inspection is necessary.

After a train has been stopped, the operator tells the crew which journal should be checked. He also requests that a check be made of the two cars at either end of the suspected car to avoid the chance of a miscount. "Some of our men have become so proficient in reading recorder tapes that many cars are stopped before any mechanical damage has taken place in the journal housing. This has resulted in substantial repair cost savings and has kept delays to a minimum," says Mr. Ness.

If, in the judgment of the man reading the tape, there seems to be reasonable doubt about a particular car, instead of stopping the train he notifies the crew by radio to watch the car and to inspect it at the next regular stop. Train-wayside radio has proved a valuable asset at some locations, especially in minimizing delays where a train might be stopped for inspection and again have to stop at a set-off track.

"Our men are not instructed to stop a train at any definite pulse amplitude," Mr. Ness comments, "but to use their own judgment by comparing the abnormal pulse against the overall amplitude pattern. Experience has proved that this pays off, by detecting incipient hotboxes."

OPERATORS are instructed to read the recording chart for hotbox signs.

CLINCHFIELD—W. E. Prince, Jr., engineer, signals and communications, reports on a hotbox detector that is on the line of road about five miles from a dispatcher-controlled CTC signal. The recorder is in the chief dispatcher's office.

When an abnormal deflection is seen, the chief dispatcher advises the train dispatcher, who places the controlled signal to stop and arranges to have the

(Continued on page 18)

Detector Maintenance?

additional training in detector maintenance. The field equipment, in particular, requires considerable attention. With detectors being installed over the system "we believe the signal maintainer is in the best position to maintain the equipment," says Mr. Carlson.

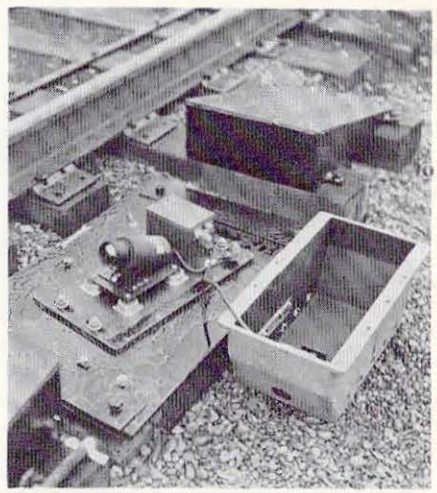
LOUISVILLE & NASHVILLE—Hotbox detector equipment is installed by the signal department, except for blocking filters and waystation filters when carrier is placed on an existing communication circuit. Maintenance is performed by the signal department on all facilities except that portion installed by the communications department.

"If trouble exists in the detector equipment, it is the duty of the signal maintainer to correct it. If he isolates the trouble to a particular module and a change of tubes does not correct the trouble, he then inserts a spare unit and sends the faulty unit to a central point on his division. There the unit is checked, reconditioned and returned to the maintainer for a spare," reports P. P. Ash, superintendent communications and signals.

The maintainer's preventive-maintenance program calls for him to make periodic voltage readings and inspect the physical layout. He keeps a record of all his voltage readings at each test point and the physical measurements of the scanner adjustments for the purpose of comparison when malfunction is evident.

MILWAUKEE ROAD—Installation of hotbox detectors is handled jointly by signal and by communication forces. Each craft handles that portion of the work normally falling within its work jurisdiction. Of six detector installations, all are installed about six miles in approach to towers where operators read chart recorders connected to the trackside location by wire lines. Each tower has radio for communication with trains.

"Maintenance of these detectors and recorders is handled by electronic



MAINTENANCE of hotbox detectors is done on a scheduled basis. Physical and electrical checks are made.

equipment maintainers of the communication department," says Donald L. Wylie, communications engineer. "The entire system is checked at two-week intervals and adjustments or tube-renewals are made as required. In addition, the local signalman makes a daily check to insure that rail-mounted transducers are in good order and that

(Continued on page 18)

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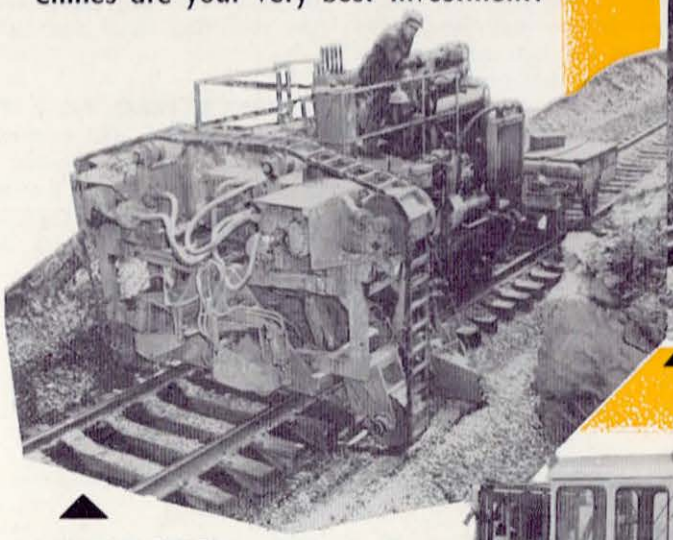
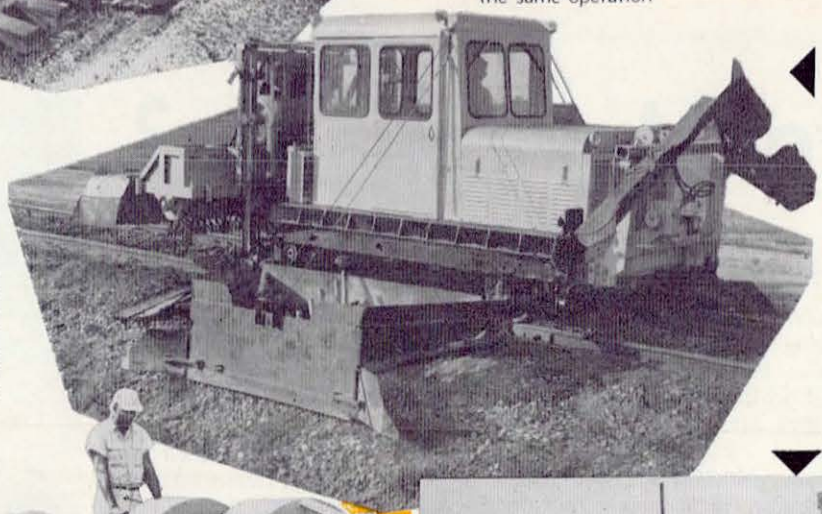


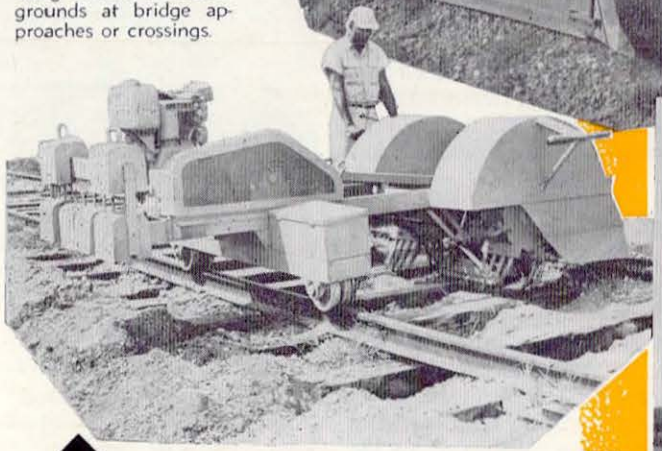
KERSHAW CRIB-ADZE—Designed for high-production rail relaying gangs, the Crib-Adze, working off either rail in either direction, cribs between the ties, automatically adzes the ties in the same plane, and sprays wood preservant on ties — all in the same operation

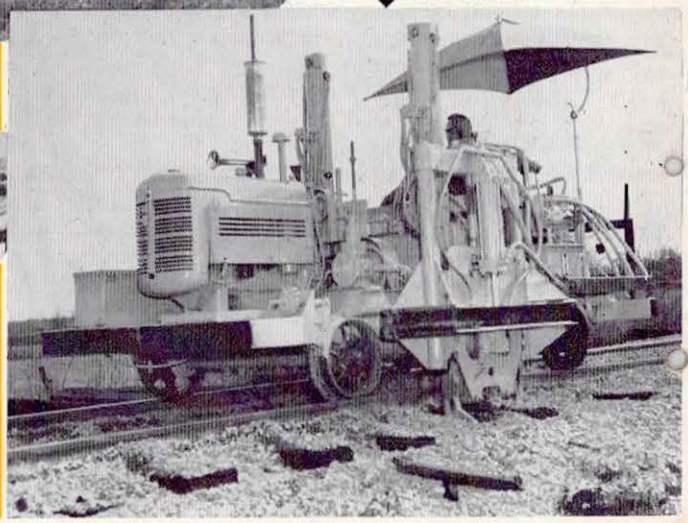
KERSHAW UNDERCUTTER AND SKELETONIZER—Used in skeletonizing and undercutting operations to remove ballast from beneath rails and ties, and to lower track, if desired. The Undercutter can lower track as much as six inches in a single pass, making it ideal for tunnel cleaning, or lowering track in station grounds at bridge approaches or crossings.



KERSHAW BALLAST REGULATOR — Now available in three models, the Heavy Duty, the Standard and the Special. Among the 14 distinct operations performed by the Ballast Regulator are these: Used as a track patrol to scarify, deweed, regulate and shape the ballast shoulder; used with surfacing gangs to regulate and distribute ballast ahead of tampers; used to regulate and shape the ballast slope after surfacing, freeing an entire regulating and dressing crew for other jobs.

KERSHAW SUPER JACK-ALL— A combination hydraulic jack-tamper designed for high production track raises ahead of one or more tampers. The Super Jack-All jacks track inside rail and tamps outside rail with tamping feet actually going under tie ends. Kershaw also manufactures a Standard Jack-All.





KERSHAW SELF-PROPELLED, BRUSH-TYPE KRIBBER — Designed for smaller rail-relaying gangs, this machine is used for cribbing and brushing ahead of adzers. The self-propelled feature allows you to set the machine at the desired cribbing depth. It then moves down the track automatically, cribbing and brushing at the desired depth

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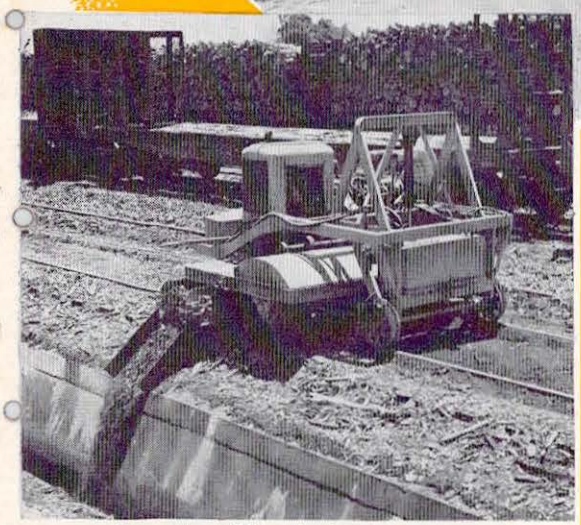
KERSHAW TRACK CRANE–A self-propelled machine, equipped with tie inserter, for use in timbering gangs. The Track Crane is used to redistribute and position new ties for insertion, to insert new ties, and to pick up and stack old ties.

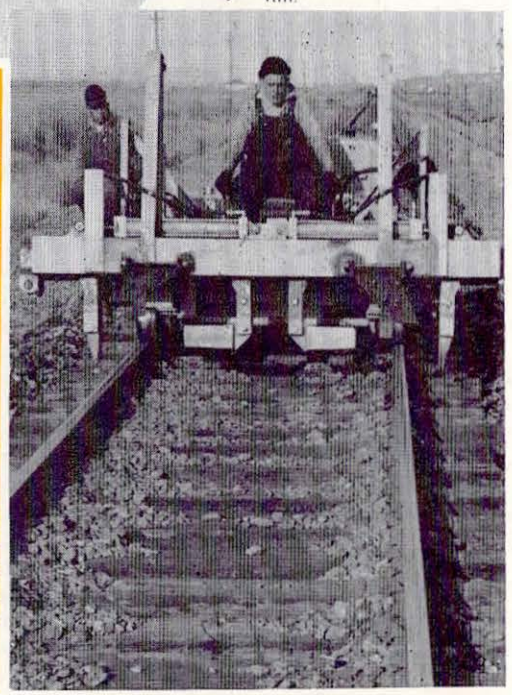
KERSHAW TWO-WHEEL KRIBBER–Used for skeletonizing. The machine removes ballast from the center of the track and also from between the ties and outside the rails. . .

KERSHAW TIE BED SCARIFIER (with tie inserter attachment)– Used to scarify old cemented tie beds in timbering gangs, and for inserting ties. With special Crib Cleaning Attachment, it is used behind Two-Wheel Kribbers for removing all ballast, including ballast under the rail.



KERSHAW UTILITY TRAILER — Equipped with rails for moving trackwork equipment. Trailer comes in three models, single axle, double axle and triple axle, with capacities from 4,000 to 18,000 pounds. The machine also comes in models without rails for moving off track equipment. Only one man is needed to load and unload equipment onto track.

KERSHAW TRACK BROOM —Cleans car drippings and other waste materials from track, removing waste beyond shoulder and leaving cleanly swept track down to tops of ties. Used in classification yard tracks. The Track Broom also may be used in surfacing operations to remove loose ballast from track after surfacing.



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INSTRUCTIONS FOR USING HOTBOX DETECTORS (*Continued from page 15*)

crew call him. While the train is approaching the signal, the chief dispatcher counts the cars to determine the location of the hotbox, and is prepared to give this information to the crew.

If the journal is very hot, the train crew sets the car out on a spur track for repairs by car repairmen. Should the crew determine that the car can continue, a message is sent ahead to the car inspection forces at the next set-out point and the car is again examined and necessary repairs made.

LOUISVILLE & NASHVILLE—In connection with one hot box detector installation, an information signal is mounted on the mast of an existing automatic signal. Instructions were issued to the operator to set this signal displaying "Hot Box" when a hotbox is indicated on the recording. When this signal is illuminated, the approach signal will display an approach indication. Train crews are instructed to stop at the "Hot Box" signal when it is illuminated and contact the operator by telephone, which is located at the signal, reports P. P. Ash, superintendent communications and signals.

After train has stopped and the trainman calls operator for instructions, the operator must tell the trainman the car on which the hot journal is indicated, the axle location on the car, and which side of the car is involved. The operator also instructs trainman to report back to him after inspection is completed, telling him the initials and number of car or cars, involved, the condition of journal, and whether the journal was serviced or the car set out.

The operator records the information on the recording of the train inspected and files this section of the chart. Charts are mailed to division headquarters every 24 hr. The record of each car indicating a hot journal is further checked for final disposition, after which a weekly report is prepared to indicate the performance of the detector system.

READING—G. B. Blatt, chief signal, electrical and communication engineer, reports that, if a hot journal is detected on the chart, the towerman must proceed with operating rules governing observation of hotboxes and immediately notify the train dispatcher if amplitude differential on chart is 15 mm or more. If such is the case, the towerman will display a stop signal and train will stop. Crew will call the tower operator and ask why the train was stopped.

"The affected car in train, the journal on the car, and the side of the car can be readily picked out on the chart," says Mr. Blatt. "The journal location must be given to the crew for their immediate inspection after train is stopped to avoid unnecessary train delay. Care must be exercised in picking out proper car on chart and crew members must also check cars adjacent to one indicated on chart."

Towerman must write the following information on the chart at the beginning of each train being recorded: train number, number of cars in train, time train passes tower. Typical charts are attached to the instructions to help the towerman familiarize himself with basic patterns.

A potential hotbox is indicated on the chart when an amplitude differential is less than 15 mm but greater than 8 mm. If such an indication shows on the chart, the train is not stopped, but the operator at the next tower is told what was observed and to look for a potential hotbox on the car in question.

If a hotbox develops and is picked up by the detector recorder, the towerman must record the car number on the chart. After the crew receives information from the towerman, it examines the car in question and proceeds with handling of hot journals according to past practice.

WHO HANDLES DETECTOR MAINTENANCE? (*Continued from page 15*)

no physical damage has occurred to track equipment. In the winter, he has the additional duty of clearing the scanner area of snow."

PENNSYLVANIA—"Hotbox detectors are now maintained by our signal and communications forces," states F. L. Chatten, system engineer-communications and signals. "A number of our employees were sent to instruction classes conducted by some manufacturers. Men who attended these classes were chosen because of their ability to instruct those who would actually maintain the detectors. In addition, these men can be called upon by the maintainer when the failures are of such a nature as to require a person with more technological training."

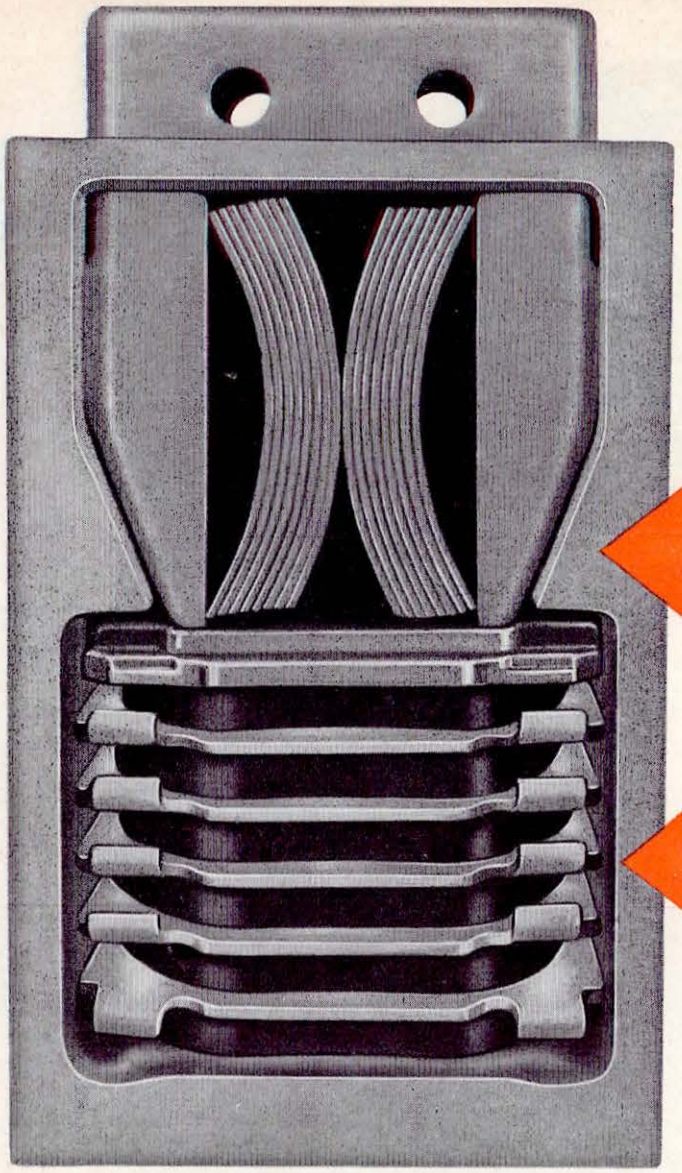
To insure proper maintenance, the maintainer is provided with a spare part kit, an alinement device, a tool kit, portable oscilloscope and an analyzer. Maintainers examine the recording charts to detect irregularities; check batteries and charging rates; clean lenses on sensors; tighten bolts; adjust sensors for alinement; adjust gain; check fuses, lamps and tubes; and observe and report any track condition that might interfere with proper functioning of the detector. As conditions develop and are corrected, the information is circularized so other employees may benefit from the experience.

PITTSBURGH & LAKE ERIE—Only when an actual hotbox is spotted by the detector is the information of train side, car number and degree of heat transmitted via the CTC code line to the control office where the operator controls "Hotbox" signal indications to stop the train for inspection.

"The maintainer makes daily inspection trips to the hotbox detector location where standard readout tapes are located," states D. W. Shackley, superintendent signals and communications. "The maintainer checks the tapes to confirm the information sent to the control office and for any indication of possible trouble. He also makes a general visual inspection, correcting anything he might find wrong. Operational tests are made on the translating equipment to check that proper car numbers and heat indications are being sent to the control office."

Once each week the maintainer takes the various voltage readings of all units in service, thus providing a good operational check. When the stylus mark on the tape appears erratic or incorrect, or voltages do not measure within the proper percentage, the maintainer thoroughly inspects the apparatus to locate the cause of the trouble before a failure occurs.

Once a month, detector head alinement and output is checked by an oscilloscope and all electronic tubes are tested. Tubes at the low side of the "good" scale are discarded. Other maintenance—such as having rail joints tamped, changing tapes and stylus, and recalibrating input signals as fed to the translating apparatus—is done as required.



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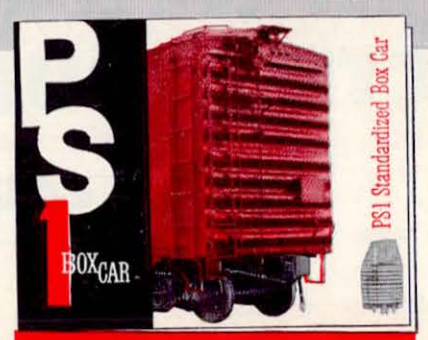

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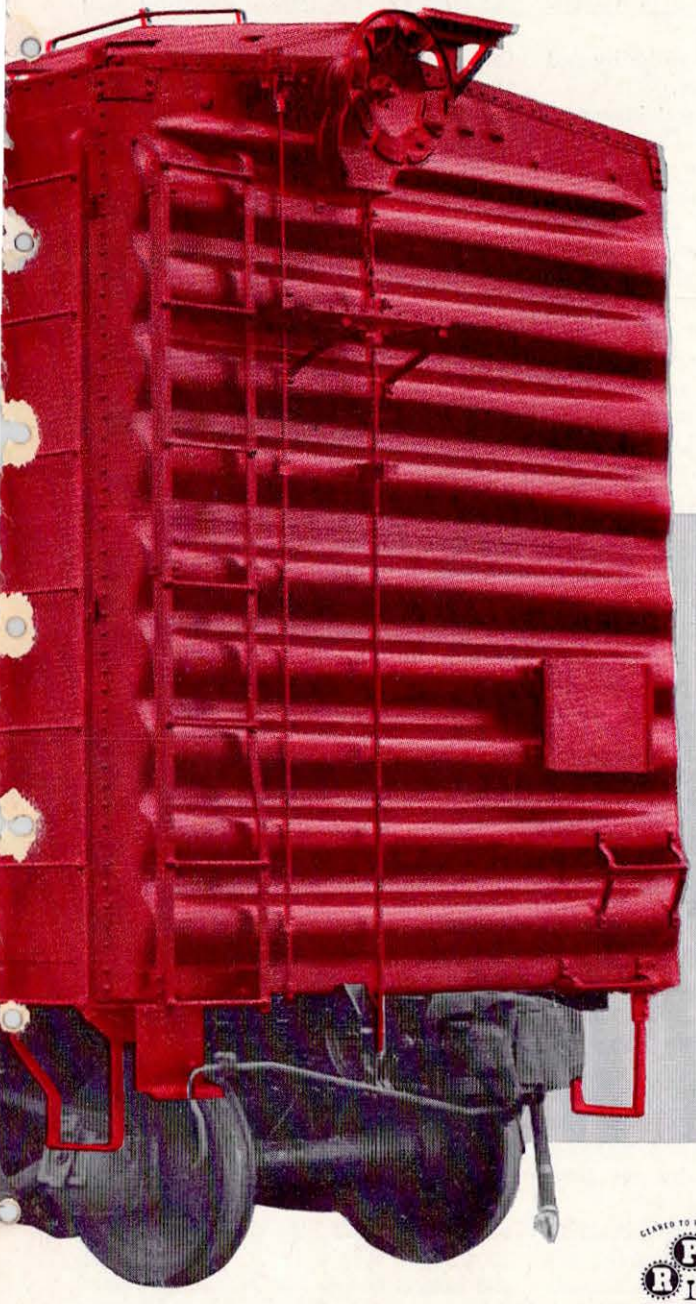

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New Yard Controls Cut Costs

► **The Story at a Glance: Terminal operation and particularly industrial switching need not be a no-man's land where control over service and cost are maintained in haphazard fashion. Thorough-going research, followed by application of new methods—always in logical order—promises to tame the problem.**

Canadian Pacific has done extensive research over the past six years and now has a pilot project in the final stages of implementation. Frisco, among a number of other roads, has begun applying similar control procedures to terminal operation. Operations Research, Inc., has made a comprehensive study for the Western Maryland of possible improvements in design and operation of terminal systems.

There is no simple answer yet apparent. But indications are that basic research done by the CPR is finding its application on other roads, and operations Research has found that the tools available from its WM research project "are applicable to a wide range of freight handling problems."

The Railways Systems & Procedures Association last week delivered what it advertised for its three-day Autumn meeting: a penetrating analysis of terminal problems which outlined in detail the research and operational approaches which have proved successful in bringing terminal operations under management control.

RSPA President R. G. Lake, general manager of the Bessemer & Lake Erie, put the problem in sharp focus in defining terminal operations as the area where "more sins are committed than in any other area of our operations." And RSPA members dug into the issues with the urging that they "continue to employ and develop the tools of scientific management" in terminal operations. E. D. Dahill, supervisor of rates and classification for Ford Motor Co., also emphasized the importance of establishing procedural control, of improving communications, of increasing the ratio of supervision, all as aids in improving performance.

Among the major elements in RSPA's terminal study were an outline in depth of the painstaking research leading to applications of CPR's pilot project in terminal control (described by John W. Burrows, director of methods and standards research); a description of Frisco's IBM-card car control system (presented by W. T. Bryan, director of industrial engineering); and a review of the findings of the WM yard analysis program (given by Dr. Emory Cook, of Operations Research).

CPR's pioneering research began after a detailed survey of terminal switching activities showed that service could be improved and costs could be cut if productivity were increased. Months and years of study—first isolating problem areas, then researching to find solutions—have produced a five-step program leading to establishment of tighter terminal controls and development of measurements to determine the terminal performance:

- Lines of supervisory authority and responsibility were redrawn.
- Modern equipment and improved facilities were provided. Communications were upgraded, with radio installations linking switch crews, yardmaster and outside checkers; with a complete intraterminal Teletype system joining the major components of the pilot project area.
- New methods and procedures were introduced. Channels of communications between industry and railroads were standardized and strengthened.

Much research and development work went into production of a series of documents, necessary to the day-to-day operations and at the same time significant for their provision of data for quality and quantity control indices.

- A training program to improve the quality of supervision was introduced—because CP found that even the best organizational structure, facilities and methods function smoothly only when supervision is effective.
- Productivity control for terminal operations are being established. The aim: To develop a fast, accurate means of comparing output standards with actual operations. As now planned, the system will produce a weekly performance index, showing not only current performance levels, but also trends.

Mr. Burrows wrapped it up in equation form: Organization plus facilities plus methods plus supervision plus standards equals control.

Frisco has developed a perpetual-check system of car control similar to CPR's but with modifications—maintenance of the car inventory on IBM cards, principally.

Basically, the procedure involves "switching" the cards in an index file in the same manner that the cars are switched.

Frisco has placed the system in operation at several points and, Mr. Bryan told the RSPA, it "has proved so successful in reducing the amount of ground checking we do and improving the handling of cars that it is being extended to all terminals and divisions."

Benefits, he pointed out, extend beyond the mere maintenance of an exact, up-to-the-minute car inventory. Car control provides a better method of handling demurrage—"collections have increased during a period when business was decreasing." And, since control documents list the time a car arrives in the terminal, the time it's spotted, and the time it's released by an industry, the superintendent has a quick, accurate quality control check to determine the level of service being given.

The system works this way (using Tulsa, Okla. as an example):

From an advance consist (received via Teletype tape) a deck of IBM cards is cut—one card for each car in the inbound train. The hump list is prepared from the card and, as the cars are classified, a clerk in the yard office files the card in a circular file cabinet with a separate slot for each yard track. Cards go into the file slot in the same order that cars go into the class tracks, so that an accurate track-position check can be made at any time. Frisco's daily 7 a.m. yard check is now made by pulling the cards and running them through an IBM 402 printer.

(Under the old system, several yard clerks spent most of the morning making an on-the-ground check—and the information was outdated by the time it was compiled.)

Car control and industrial switching is obtained in similar fashion. Cars for East Tulsa industries, for example, are routed to Track 18 in the class yard. At least once during each shift they're transferred to a nearby flat yard for further classification.

When a switch crew leaves the local yard, the yardmaster informs the car clerk and tells him what car the crew is taking. The clerk then places the car cards (along with pre-punched cards showing "set" or "constructively placed"), in an industrial file box with dividers numbered to designate specific industries.

When an industry calls the clerk and releases an empty car, the clerk cuts a new card showing the car as empty. He substitutes this card for the old one and inserts beside it a prepunched card showing "pull." Similary, if an industry calls to release a loaded car, the clerk

will ask for pertinent routing data and then cut a new card showing the car as a load and giving routing so that the car can be humped even before the waybill arrives. A prepunched "pull" card is inserted in the file with the new car card.

Radio contact between clerk and yardmaster and crews now often makes it possible for pulls to be made within a short time after an industry calls the office. Under the old system, transmittal of information wasn't nearly so fast. "It would have been the next day before anyone would have known of the release of the car and possibly even later before it was pulled."

Frisco's system brings the yardmaster to work 30 min. before shift change time for the crews. During this half hour, he studies the work to be done and lays out specific assignments for each engine period. Source of his information, again, is the car card file. If he's concerned with zone A switching, he calls for a track 54 route. The car clerk pulls the card, runs a list and sends it to the yardmaster, through a pneumatic tube. And from this list the yardmaster can determine what must be done and how to do it.

Operational key to the control set-up is the car clerk who handles the IBM cards. All industries call in to his office. On the day shift, when most industries call, two clerks handle the job.

Accuracy checks are built into the system at several points: IBM cards are checked initially against waybills to insure accuracy of punching; car initials and numbers are checked against the hump list as the train is humped; a physical check is made of inbound transfer cuts.

Yard forces, unenthusiastic at first, now like what's going on. Car clerks had a rough time when the system was put into effect—but "now that they have mastered the new set-up, they are very proud of their accomplishment."

And as for the industrial yardmaster: [They] "now drive around in radio-equipped automobiles. They know what's going on all over their territory and they're able to get more accomplished with their crews. Their job carries with it increased respect—and they like it."

The Operations Research study on the WM went far beyond control factors to embrace the whole area of yard design and operation. It laid particular stress on the potential for significant cost production through improved yard performance, as opposed to the lesser potential in cutting costs through improved train handling over the road.

According to OR, a completed research "provides a unified theory of the design and performance of classification yards . . . The research itself—i.e., the engineering relationship, the design and operating principles, performance characteristics of current and future yard equipment—are generally applicable to other railroads. It is now a practical matter to make reliable predictions of yard operation costs, given only a map of the yard, a description of the general type of the yard equipment and a general description of yard or system traffic. Such predictions have obvious application in setting operation standards for present terminals, as well as choosing between alternative construction programs."

Still a fourth RSPA presentation brought on another pioneer in standards and controls, the Union Railroad of Pittsburgh, with a discussion of yard standards and crew performance measurement presented by John Grecula, transportation engineer.

Railroading After Hours with Jim Lyne

QUILL MEMORIAL—I see the Pennsy has had to lay off a lot of people, and enforce severe pay deductions, as the aftermath of the recent strike which President Symes reported was settled under terms that Quill could have had without a walkout. I would suppose that what has happened might be appropriately labeled the "Quill Memorial Lay-off and Pay Cut"—he having been the only one who gained anything by the costly conflict.

SCURRY SPEED—A railroad association officer was recently asked about a question which had been handed to him for solution, and his answer was: "We haven't come up with the final answer yet, but we are scurrying around to find it." He then added—"but sometimes we scurry kind-of slow."

WORKING RULES ANALYZED—I have a note from WP President Fred Whitman commending the 68-page pamphlet "Manpower Utilization in the Railroad Industry—an Analysis of Working Rules and Practices" by Morris A. Horowitz, published by Northeastern University, Boston.

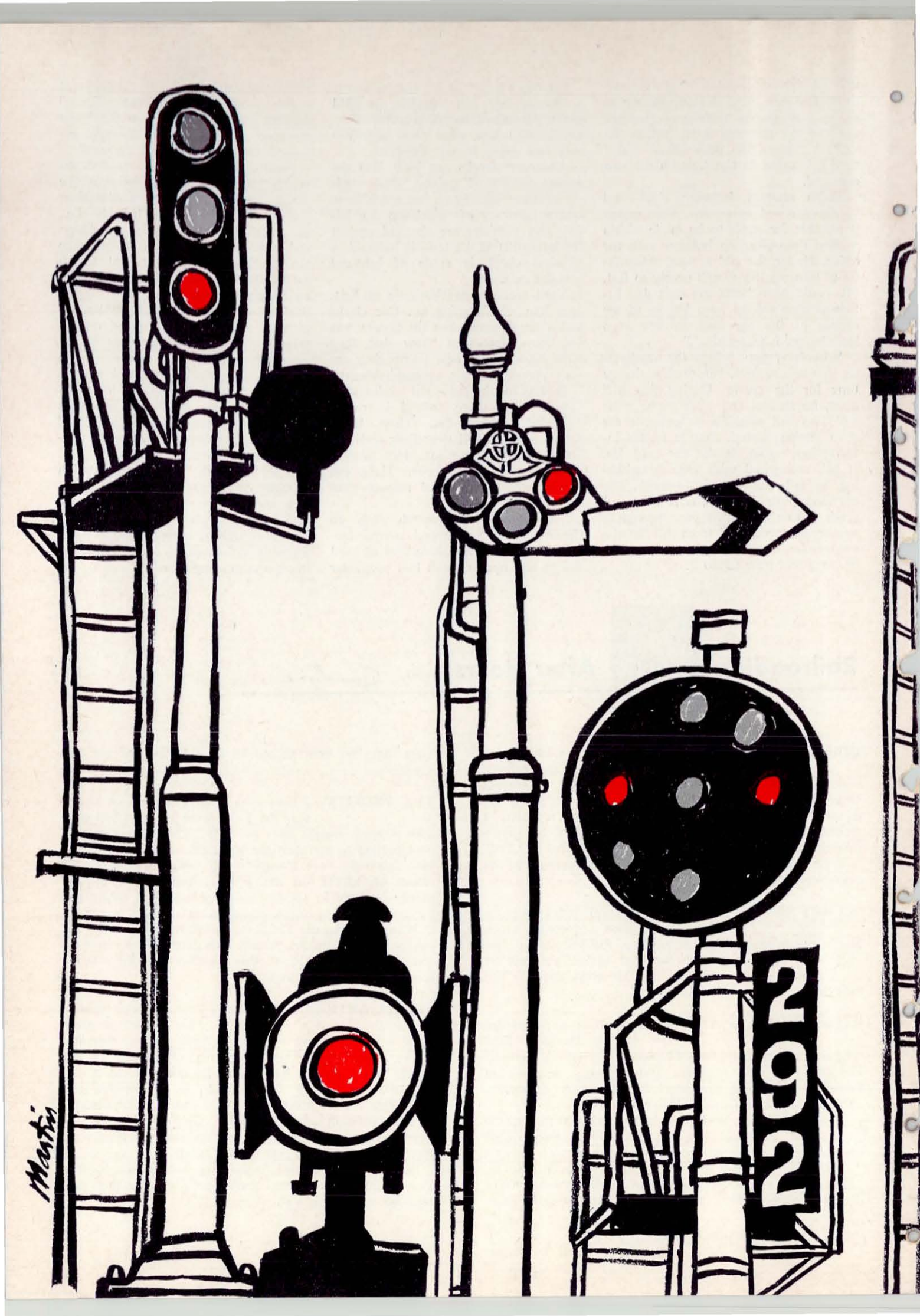
I subscribe to Mr. Whitman's high opinion of this monograph—and especially of the action of disinterested scholars getting into controversial questions like this. In Canada, the "fireman off" controversy was decided by yielding to the findings and advice of disinterested third parties—which follows the good old Anglo-Saxon principle that "no man should sit in judgment on his own cause."

TVA 'PROFITS'—I have seen a news item which asserts that the TVA saved shippers $24,800,000 in their freight bills in 1959. The taxpayers paid $4.4 million to maintain the waterway and the TVA people claim the "net transportation benefit" represents a return of 15.2% on the $134.3 million of taxpayers' money invested in the waterway. Nothing is said about the property taxes on an investment of $134.3 million.

Who is getting the $24,800,000 "saving"?—not the taxpayers who put up the money. No doubt all the shippers who put their freight on this waterway consider themselves private enterprisers.

ARPAIA ARTICULATE AGAIN—I have been reading the text of a speech made a few days ago by Tony Arpaia, once a regulator but now one of the lowly regulated. Seems to me the change has improved his oratory by taking some of the be-cautious out of it. For instance, in the present talk, REA Vice President Arpaia takes a whack at the division of transportation into rail, water, highway and air segments. He thumps even harder at the complexity of common carrier rates and classifications.

He also calls attention to the fact that "public for-hire transportation has stopped growing. Why?" He then proceeds to answer his own question.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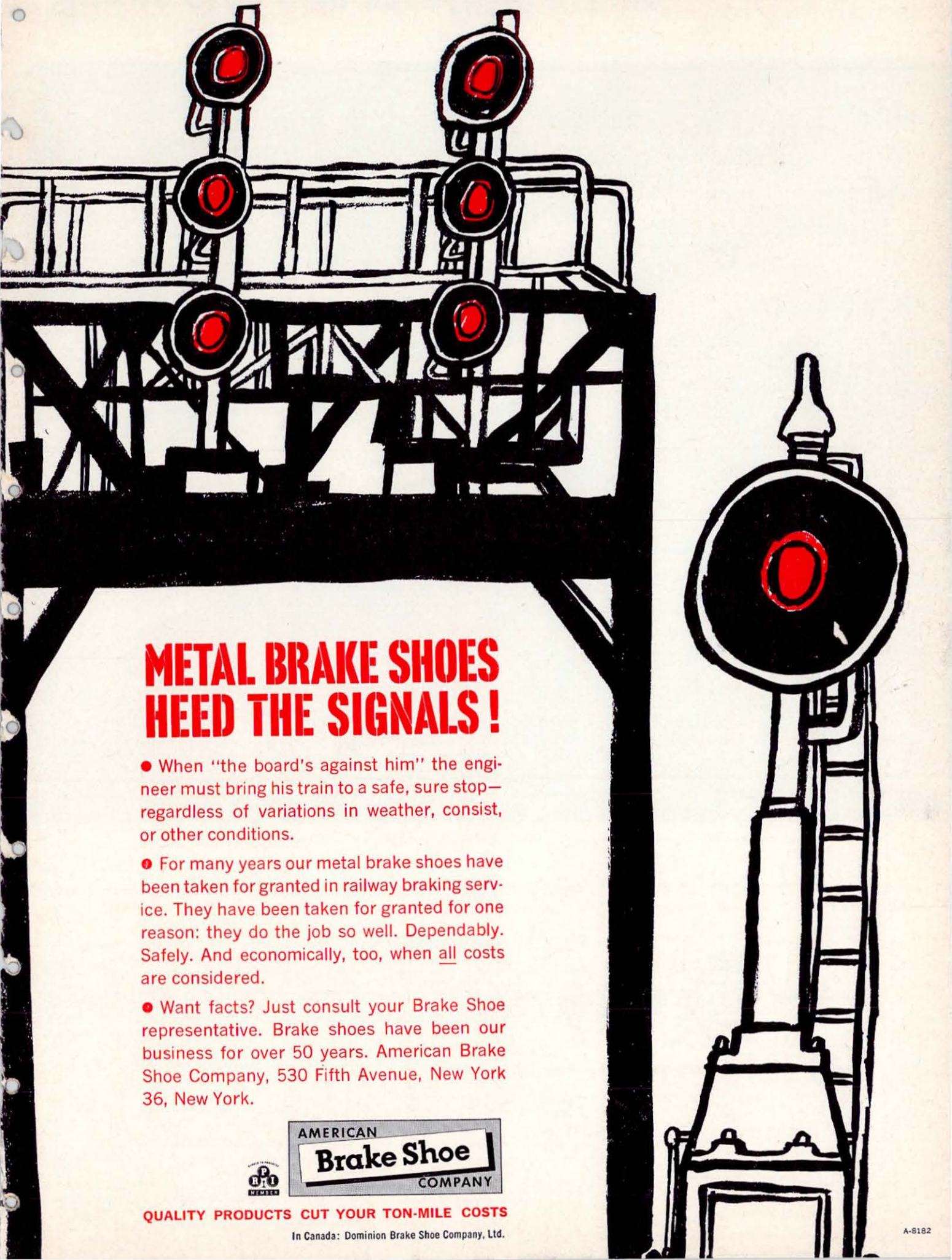

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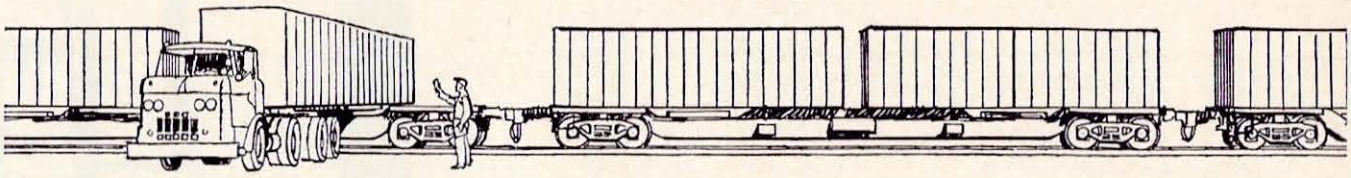

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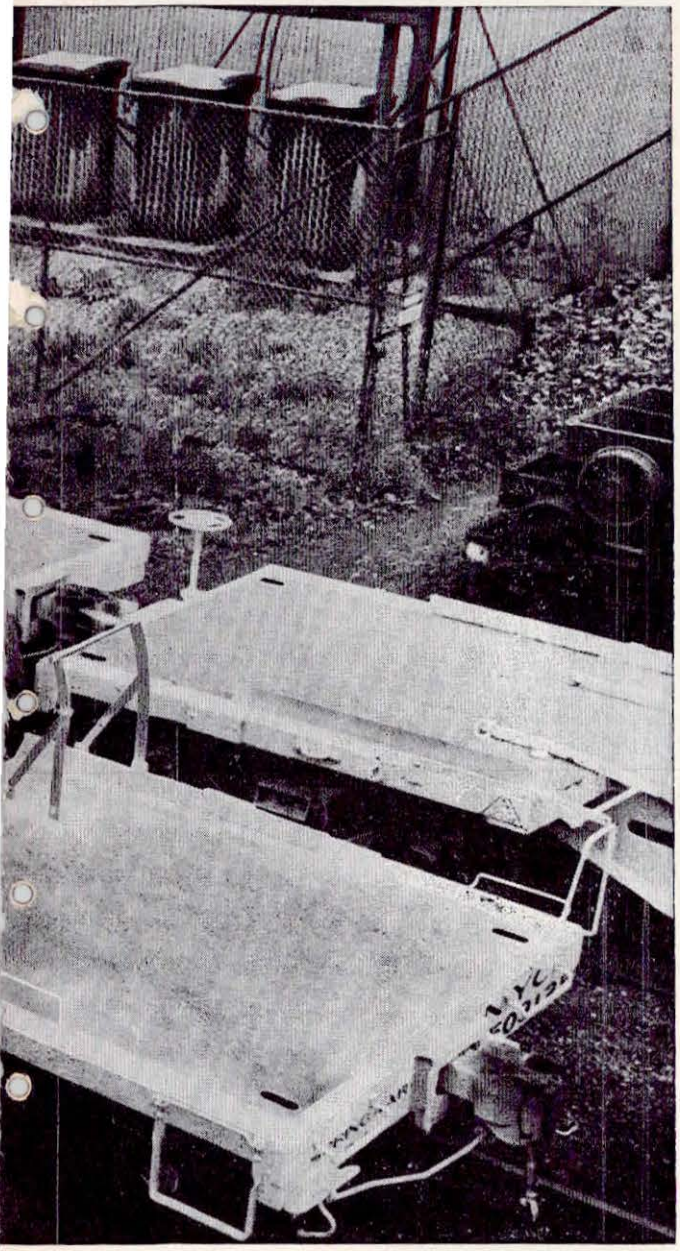
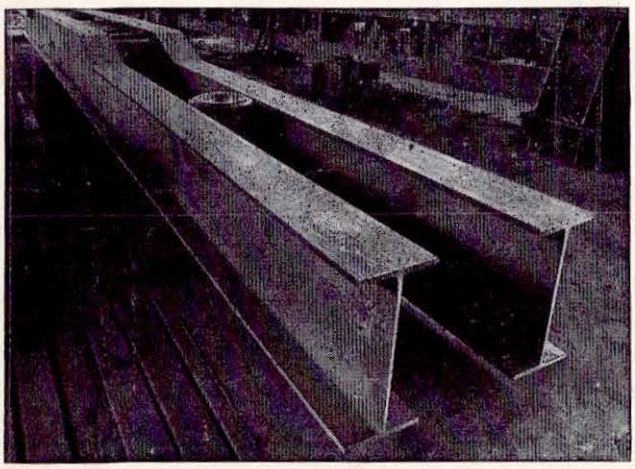


Extra strong backbone made of USS **TRI-TEN** High Strength Steel reduces weight.



These new Flexi-Van piggyback cars have a strong, rigid backbone of USS TRI-TEN High Strength Steel.

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Fifty-three of these cars have been purchased by the New York Central from the Greenville Steel Car Company. The center sill, which must be exceptionally strong and rigid, is made from USS TRI-TEN High Strength Steel. USS TRI-TEN Steel is noted for its toughness and weldability. It has a 50,000 psi minimum yield point which is 50% higher than carbon steel. The two USS TRI-TEN Steel C.B. 331, 141 #/ft. sections used in the sills are 58½ feet long. They are reinforced with TRI-TEN Steel flats 6″ x ¼″ x 26′ for maximum rigidity. For 53 cars, 837 tons of USS TRI-TEN Steel were used.

Other USS products used on these cars include USS Multigrip Floorplate for walkways and USS "one-wear" Wrought Steel Wheels. If you are building hopper cars or box cars, USS COR-TEN High Strength Steel offers a higher yield point *plus* an atmospheric corrosion resistance rating of 4 to 6 compared with carbon steel. For more information on any of these products write United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

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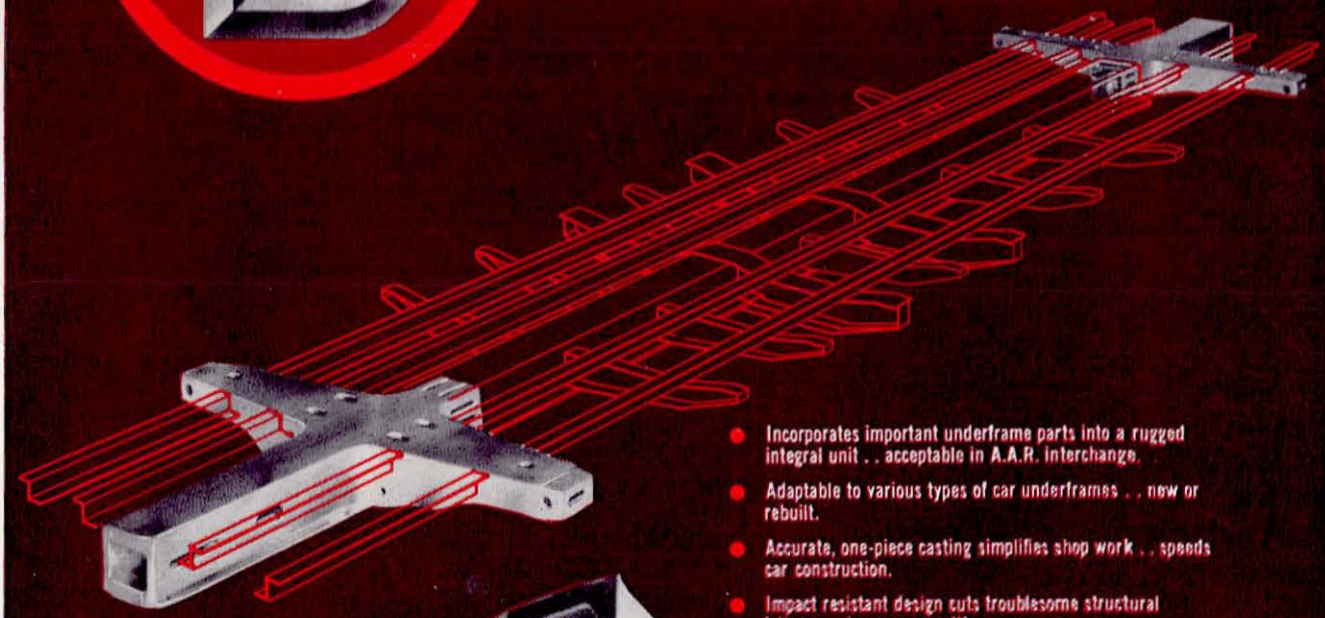

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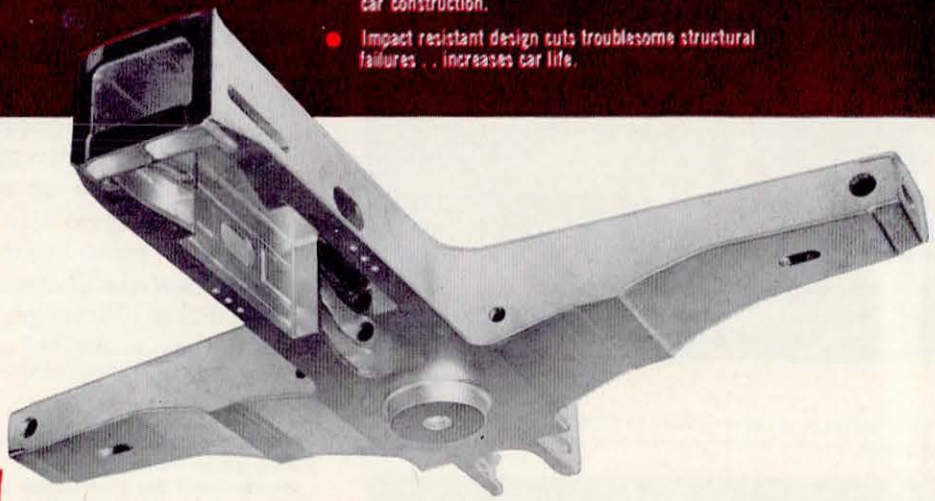

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Why Not Reflector Markers?

To the Question and Answer Editor:

Referring to the article "Why Not Reflector Markers" (RA, Sept. 5, p. 13), I wish to make the following comments because of my feeling that reflector switch banners are more efficient, safer and more economical.

I have been in a signal department of a railroad for almost 45 years, the last 30 of which have been in supervisory capacity. It so happens that I took care of switch lamps on a 30-mile territory for several years and what I have to say is from actual experience. Recently I have become interested in the possibility of Scotchlite reflectorized banners on high switch stands, omitting the switch lamps, although this we have not as yet done.

My experience, as well as that of any other person who has taken care of oil switch lamps, has taught beyond a doubt that a failure of an oil switch lamp is a common occurrence. The switch lamps are filled once a week and if the light happens to go out on the day it is filled it may remain out for six or seven nights, if not reported. The frequency of these failures contributes to the fact that very few are reported out by trainmen. The causes for lamp failures are numerous, among them are vibration by passing trains causing wick to turn up or down, bugs getting into lamp (which is a very common cause), tampering by trespassers, lenses broken out (which is also common), and the use of light by trespassers and possibly some employees for lighting cigarettes, etc.

The switch lamp must be taken off the shaft for filling and cleaning. Therefore, it cannot be fastened securely to switch staff, and occasionally the lamp is removed and not replaced by trespassers.

The lens in a switch lamp is a perfect target for rocks, guns, etc. Many lenses are broken out, causing lamp failures. In addition, replacing a lens is very expensive.

The switch banners, where lamps are used, are mostly made of steel and rust soon shows through, producing a very poor indication. Reflectorized material with wide-angle spread and mounted on aluminum for switch banners will not discolor over a long period of time. I would expect it to be efficient for at least 10 years. It can be permanently fastened to switch stand shaft and adjusted for proper angle reflection.

Oil switch lamps have a very narrow spread. If you get directly in the beam you get a pretty good light, but it is impossible to line a switch lamp so that a good beam is shown in more than one direction. The beam must cross the track at some point and the switch lamp can only direct the beam at 180 degrees. Therefore, it is impossible for the beam to cross the track in both directions.

The reflector banners can be shot through or hit with many rocks and as long as there is reflector material left there would be some kind of an indication displayed for an approaching train.

Failure of a headlight has been used as a reason for not using reflector banners in lieu of lamps. How many switch lamps fail for each headlight failure? I estimate this in the thousands.

There can be no doubt that reflectorized switch banners can be seen much farther, on an average, than oil lamps.

Regarding injury to employees bumping into switch stands, they always have their lanterns or should, and the banners would give just as good or better indication of location of stand as the lamp on high stands and possibly low stands.

If objection [to reflectorized banners] is caused by possibility of reducing labor, I feel that our railroad is a fair example of average railroads and we would not anticipate any reduction in force but would utilize this labor for a more profitable use.

If we in the railroad industry had not progressed, and eliminated some of our former expense, in the last 30 years, it is my sincere thought that few, if any, railroads would be operating at the present time without some assistance.

[*These comments were provided by a railroad signal officer who asks to remain anonymous.—Editor*]

A forum for railroaders who want to explore questions of importance to their industry, this column welcomes both questions and answers from readers at all levels of responsibility in the industry and associated fields. We'll pay $10 to any reader submitting a question that forms the basis for a column discussion. Address correspondence to Question and Answer Editor, Railway Age, 30 Church St., New York 7, N.Y.

What Are Your Railroad Questions?

To the Question and Answer Editor:

For some time now, I have suspected that the air signal communication system used on passenger trains is obsolete.

Why couldn't a simple low-voltage electrical system be used instead? It seems quite likely that such an electrical signal circuit would be at least as dependable as air, and cheaper to install and maintain.

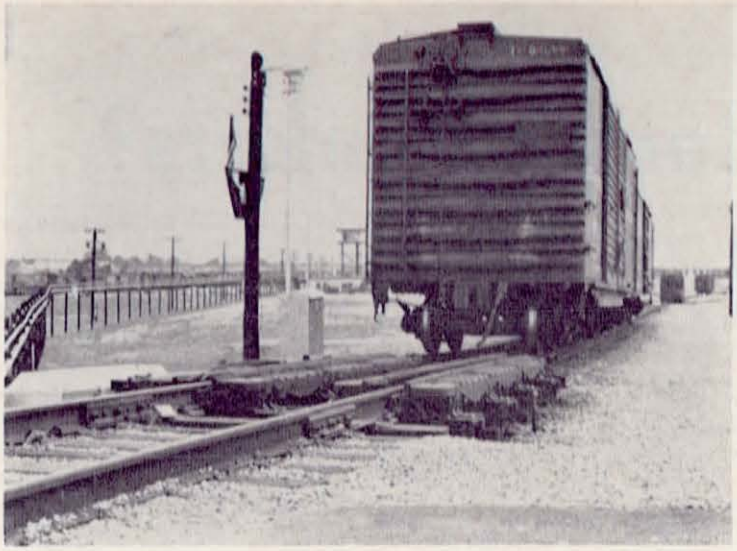
I have frequently worked on passenger runs during the last few years. The shortcomings of air communication, particularly indistinct signals on longer trains, were quite obvious.

Why has the use of air as a communicating medium been retained so long without basic modification?—*John L. Stanek, Milwaukee Road.*

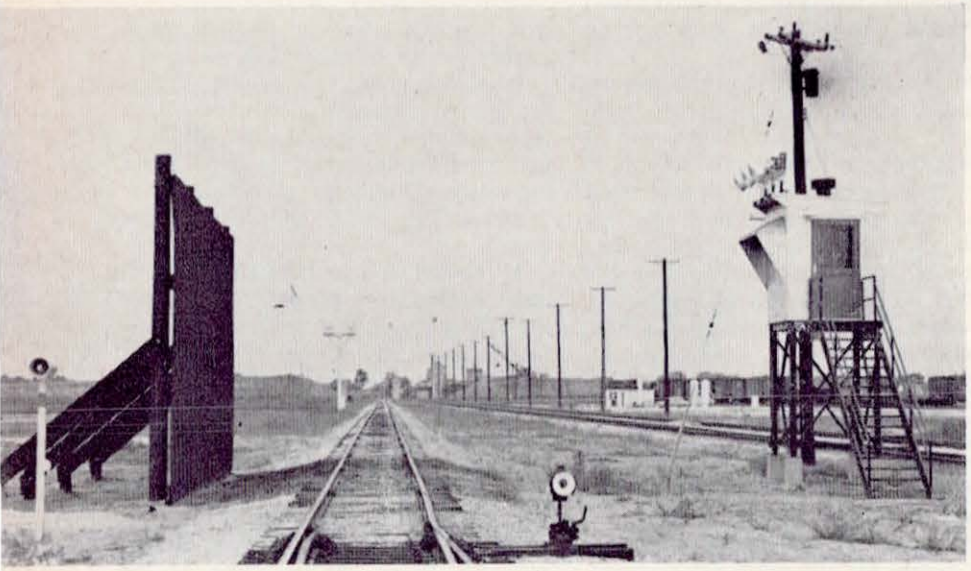
To the Question and Answer Editor:

Why are there cotter keys in knuckle pins on cars other than hopper and gondolas? Obviously hopper and gondolas must have keys in the knuckle pin because of the car dumpers. However, there seems to be no reason why other equipment should have keys.

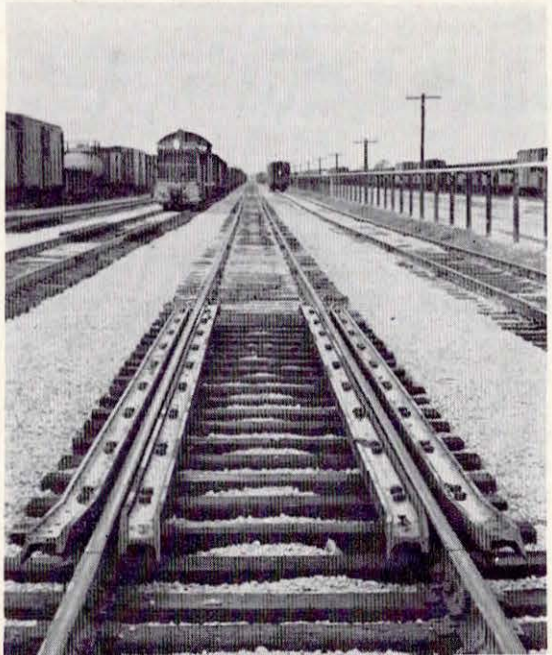
The cost of the key and the labor installing it are not important, but the delay to freight trains changing broken knuckles is. Generally, when a knuckle is broken there are no tools available to remove the cotter key. If they are available, they are on the cabin a hundred car lengths away. Hence, a 30-minute delay turns into a two-hour delay because of a cotter key which is not needed.—*S. F. Dixon, assistant trainmaster and assistant road foreman of engines, Pennsylvania.*



TREADLES check each car's progress at precisely measured intervals and transmit rollability characteristics to a computer. A weight detector also feeds data into the computer.



TELEVISION CAMERA, across track from a background wall, is placed at each end of the receiving yard for scanning car numbers of incoming trains. Mast and platform in background is a track-indicator signal.



CAR RETARDERS of a mechanical type are used near ends of classification tracks in lieu of rail skates to stop cars About 3,000 cars can be classified in a day at the "Big Four" yard. As many as 160 cars can be humped in an hour.

NYC Opens

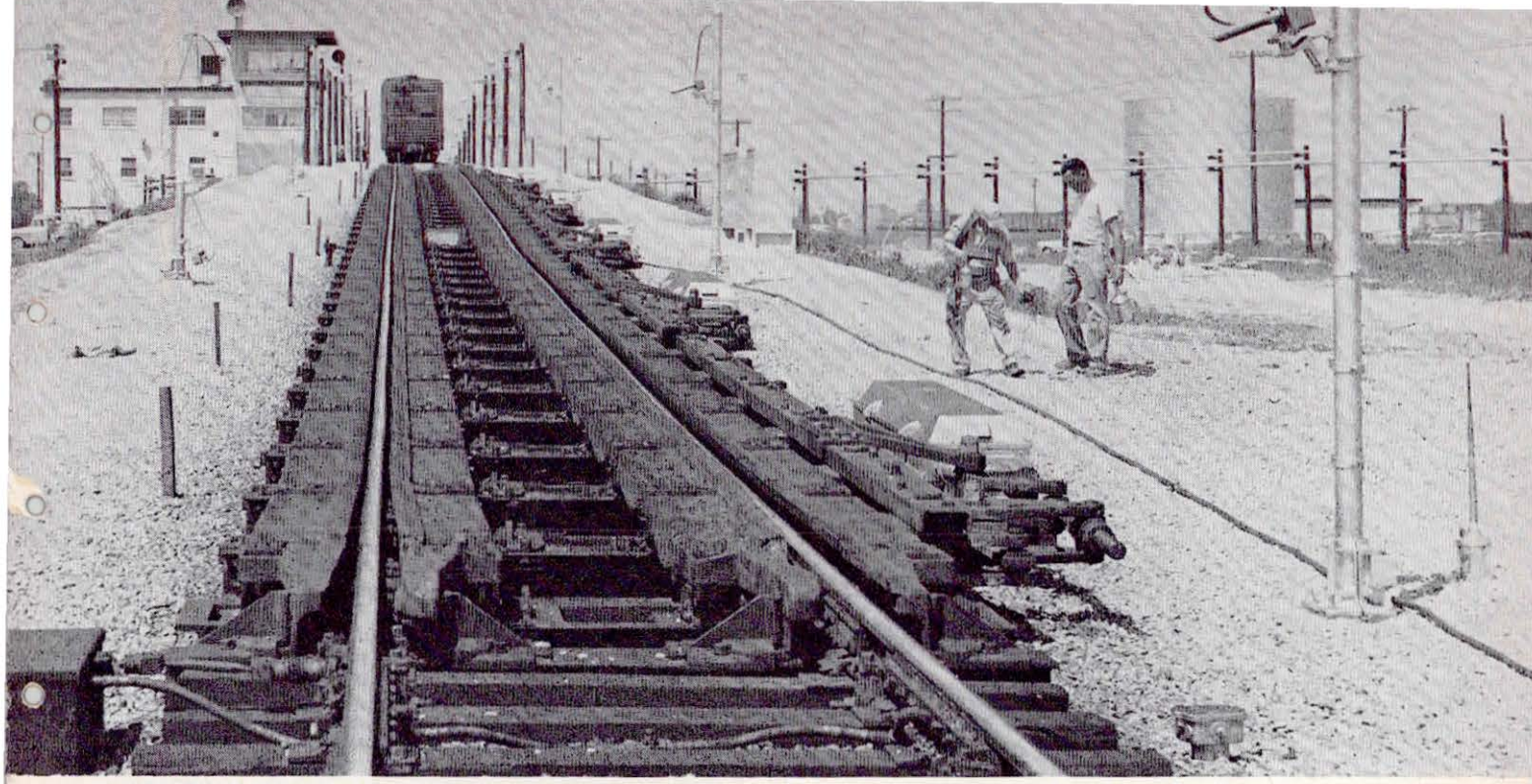
► The Story at a Glance: New York Central's Big Four freight yard near Indianapolis, Ind., is now in business. It was officially dedicated before some 500 railroad officers, government leaders and prominent shippers.

Costing $11 million, the new push-button facility is one of the most advanced yards built to date. The latest developments in railroad electronics were incorporated in its design.

The road says the new facility will cut 24 hours off a car's time en route between the Mississippi River and the Atlantic coast.

Swinging railroad lanterns through a photoelectric beam, Alfred E. Perlman, president of the New York Central, and Harold W. Handley, governor of Indiana, officially opened the railroad's "Big Four" freight yard last month. Cutting the electronic "ribbon" set off fireworks mounted on nearby poles to start humping operations.

Built seven miles west of Indianapolis, Ind., at a cost of $11 million, the new yard was called "the most modern railroad freight yard in the world" by Mr. Perlman. He pointed out that it was the fourth modern freight facility built by the road in recent years. The others are at Buffalo, N.Y., Youngstown, Ohio, and Elkhart, Ind. He also announced that the new yard



DETECTORS (left), get light from projectors (right). Cars cut beams, indicating cut length and location.

'Big Four' Yard at Indianapolis

will save 24 hours in rail shipments from the Mississippi to the Atlantic.

Liberal use of electronics is involved in the operation of the new facility. As a freight train enters the yard at 10 mph, it passes a television camera which scans the car numbers. These are transmitted by closed circuit to television receivers in the main yard office building at the crest of the hump.

There, the car numbers are classified as to destination. While this is being done, a yard engine pulls the cars from the receiving yard and begins moving them toward the hump. A yard conductor in the main yard building, with a printed consist of the cars before him, uses a series of 55 buttons, one for each classification track, to route the cars to the desired tracks.

From then on, classification is entirely automatic. Computers measure the car weight, its rollability, distance, track conditions and the wind velocity. These regulate the retarders to assure that the car will move into the yard at the proper coupling speed.

The "electronic brain" of the computers receives its information from various devices placed on the downward slope of the hump. Light detectors receive light beams from projectors across the track. Each passing car, or cut of two cars, interrupts these beams so that information on the length and location of the cut can be flashed to the electronic computer.

Treadles placed at measured intervals are activated by wheels of passing cars so that their rollability characteristics can be fed into the computer. A weight detector, which automatically classifies each car as light, medium or heavy, also feeds data to the computer.

Finally, radar antennas, placed between the rails, bounce high-frequency beams off each receding car and instantly transmit signals, proportioned to car speeds, to the computer. These beams are said to penetrate the heaviest rains and densest fog to give accurate speed measurements.

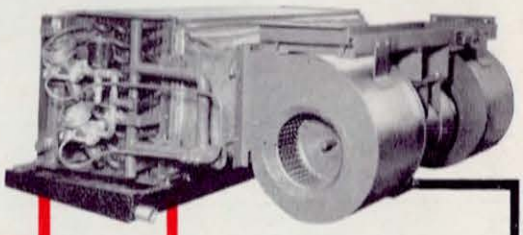
"We believe very greatly in automation," said Mr. Perlman, "because we get more volume through the yard and better utilization of plant. We of the Central are proud of our 134-year-old past and every day become more optimistic about the future."

In addition to its extensive use of electronics, the Big Four yard has other unusual features:

- Grades used on the downward slope from the hump crest and those in the body of the yard are different. They are 6% for giving a car the initial burst of speed, then 2%, then 4.8%, which starts within the master retarder and extends through the group retarders. The grade then becomes 0.10% in the body of the classification yard to a point near the track ends where a slight rise in grade is made to slow up car movements.
- The master retarder is 192.6 ft long and includes five retarder units. This unusual length is necessary to obtain the correct amount of initial retardation after the high-speed start.
- Racor mechanical car retarders are used in lieu of rail skates to bring cars to a halt near the ends of the classification tracks. Hence, skatemen are not needed.
- The operator's office in the retarder tower is supported on an open steel frame, and the equipment is housed in a single-story building at its base. This was done, it is said, to provide better accessibility to the equipment than if it were housed in multiple stories of the tower.
- The road's Flexi-Van service was taken into account when the yard was designed. A special track, with a capacity for 15 cars, has been provided, along with a wide concrete driveway to ensure efficient handling of Flexi-Van.

Some 500 railroad officers, government leaders and shippers took part in the day-long dedication ceremonies on September 15. It was stated that some 3,000 cars can be classified in a day at the yard and as many as 160 can be humped in an hour.

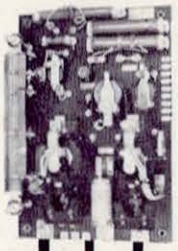
KEEP YOUR CARS ROLLING AND COOL WITH "SAFETY" AIR-CONDITIONING SYSTEMS



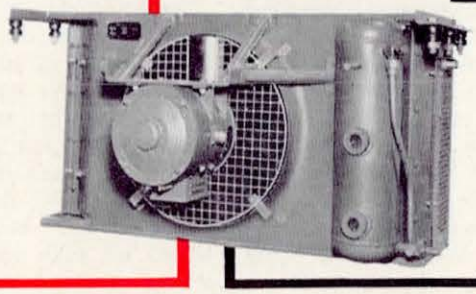
"SAFETY" OVERHEAD EVAPORATOR UNIT

"SAFETY" DIRECT DRIVEN COMPRESSOR

"SAFETY" MOTOR CONTROL PANEL



"SAFETY" AIR COOLED CONDENSER



"SAFETY" insures your railroad that our equipment will supply you with adequate and dependable air-conditioning in every car installation . . . under all weather conditions. Included in every "SAFETY" air-conditioning system are:

- direct driven compressor
- evaporative or air-cooled condenser
- overhead evaporator unit
- motor control panel

No air-conditioning system can perform more efficiently and dependably than its motor and its related controls. We design our "SAFETY" Air-Conditioning Motors expressly for use on the nation's railroads. This insures greatest possible dependability . . . with economical low-wattage consumption (unlike equipment designed for general commercial use).

"SAFETY" Control Panels are compact, simplified. They start the compressor motor and they keep it running efficiently . . . and dependably! You'll be safe with "SAFETY"! In addition to standard Air-Conditioning equipment, "SAFETY" has a complete line of component and package-type air conditioners designed for special types of cars and conditions. May we send you further information? No obligation on your part, of course.

GEARED TO PROGRESS

Safety ELECTRICAL EQUIPMENT CORP.

FORMERLY ELECTRICAL DIVISION OF SAFETY INDUSTRIES, INC.

NEW YORK • CHICAGO • PHILADELPHIA • RICHMOND • ST. LOUIS • SAN FRANCISCO • NEW HAVEN • MONTREAL

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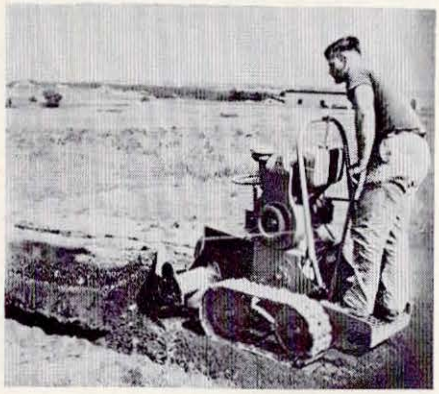
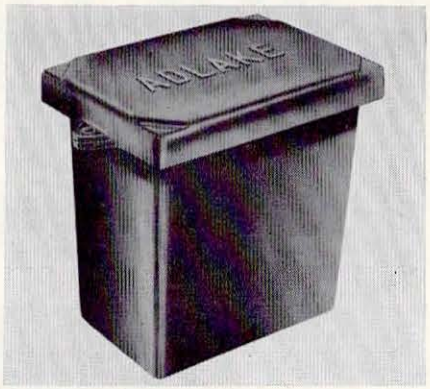
"SAFETY PRODUCTS INCLUDE: Air-Conditioning Equipment • Genemotors • Generators • Fans • Regulators • Blower Units Switchboards • Motors • Motor Alternators • Dynamotors • Motor Generators • Dual Voltage MG Sets

New Products Report



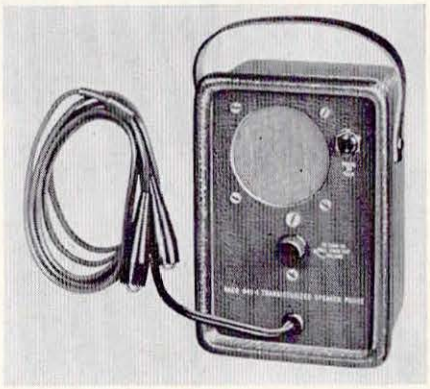
Crawler Trencher

New crawler-mounted Ditch Witch trenchers are available in all M series machines in either 9 or 12-hp models. It is self-propelled and equipped with a steering device. A crawler adapter kit is available which can be mounted to any M-3 series machine produced in 1959 or 1960. It can be attached with 5 bolts to the frame of the machine, after removal of the axle and axle bearings. *Charles Machine Works, Inc., Dept. RA, 688 Birch St., Perry, Okla.*



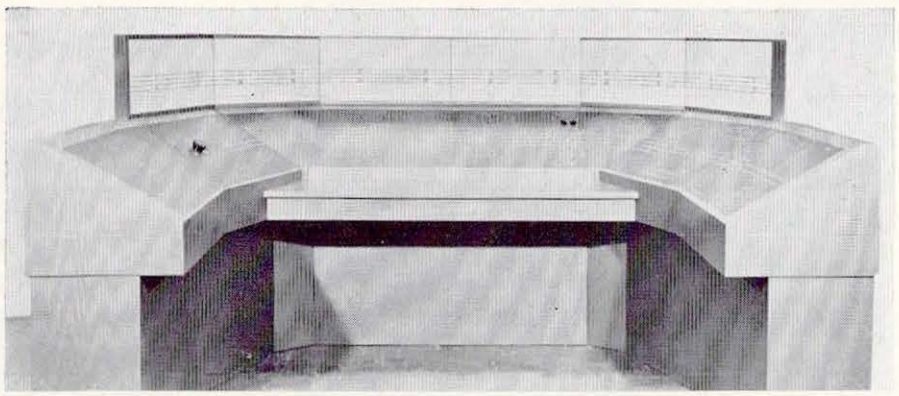
Battery Box

The only metal in the new Adlake fiberglass battery box is its aluminum squeeze connector. The box weighs 8 lb. Interior dimensions are 14½ in. long, by 8¾ in. wide at the top and 13¼ in. wide at the bottom. Over-all dimension of the fiberglass battery box is 16⅜ in. and shelf height is 3¾ in. The box will withstand temperatures from —65 deg. F to +220 deg. F. *Adlake Trans. Div., Adams & Westlake Co., Dept. RA, Elkhart, Ind.*



Speaker Phone

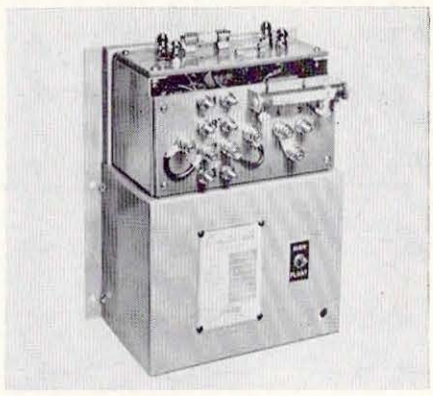
A transistorized speaker phone features the transmitter and receiver in a case 6 by 4 by 3 inches. A filter is provided to prevent interference with carrier or CTC codes. The speaker phone can be hooked onto lines, and is self-contained, being powered by four 1.5-volt type C dry cells. Battery life is estimated at 125 hr (6 hr per day for 5 days per week). *Railroad Accessories Corp., Dept. RA, 405 Lexington Ave., New York 17, N.Y.*



Track Diagram

A new type miniature track diagram takes only about two-thirds the office space required for conventional control machines. The miniature track layout panels are above the conventional control knobs, levers and push-buttons. Color coding can be used to relate the controls to their particular track diagram, and selector buttons can allow the control machine operator to activate controls for each section.

The lamp apertures in the track diagram panel are spaced on .203-in. centers. Plastic inserts over the apertures provide the desired color for each lamp, when lit. Green, amber, red and opal white inserts are used. Every other lamp in the track diagram indicates opal white. Between each white light is a red light. The white lights, when lit, indicate route line-up. Glowing red lights indicate track occupancy in a section. Green, amber and red lights are used to show signal indications. *General Railway Signal Co., Dept. RA, P. O. Box 600, Rochester 2, N.Y.*



Crossing Rectifier

The model A23 Constavolt rectifier is designed primarily for use with automatic highway crossing protection. The voltage output curve insures that the battery is charged with a voltage above the standard float voltage after each partial discharge, before it is permitted to drop back to the normal float voltage. A high float switch allows high rate charging. Current rating is 6 amp. *LaMarche Mfg. Co., Dept. RA, 3955 25th Ave., Shiller Park, Ill.*

Continued on page 36 ►

GUARANTEED *new revised* SPRING-PAK LUBRICATION

constant journal

Check these All-New Spring-Pak Features!

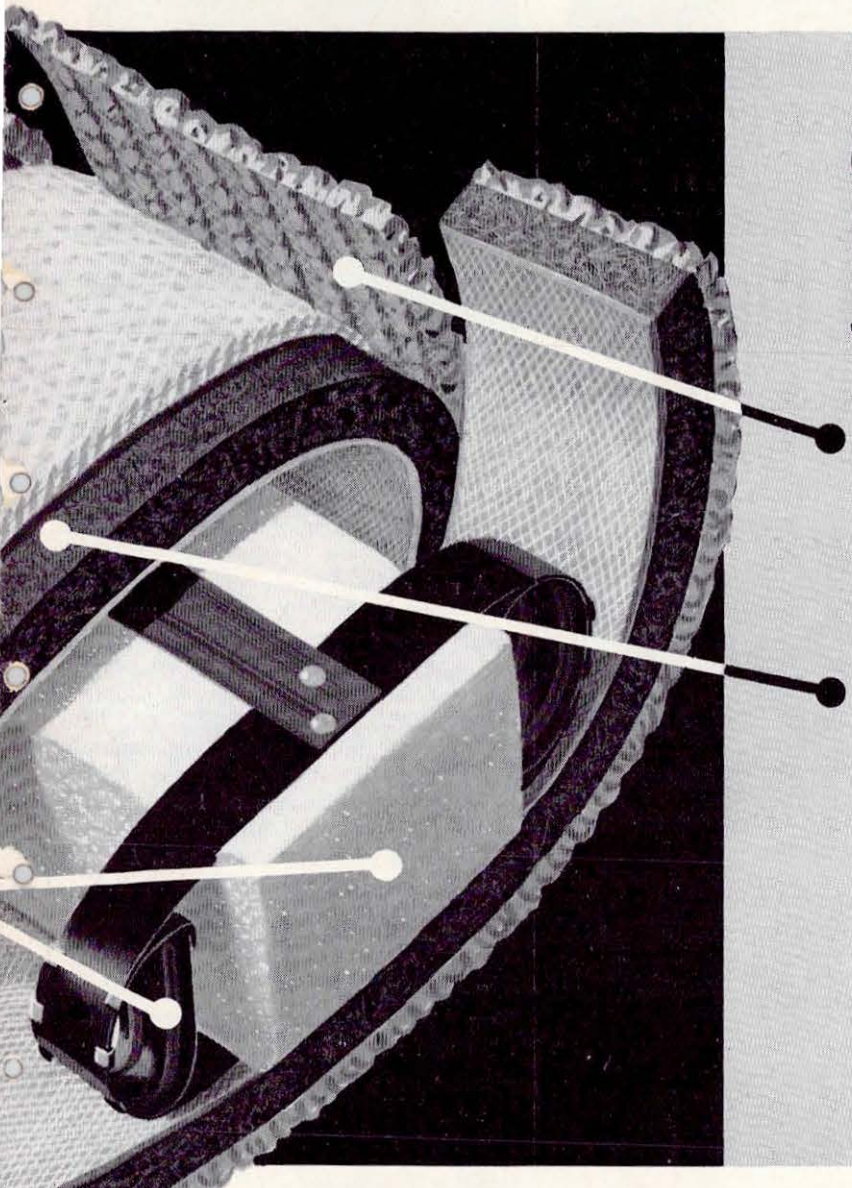
NEW SPRING STEEL RINGS with radius reinforced clips—damage-proof in normal operation—guaranteed 2 years. Assure constant pad contact with journal. Not affected by oil and heat.

NEW CONTINUOUS PERIMETER LUBRICATING WICK assures 100% wicking. New pad retains one-third more oil.

NEW POLYURETHANE FOAM CORE is an excellent reservoir of oil; not used for resiliency.

SPRING-PAK PADS *are foolproof... cannot be incorrectly installed!*

PAD (PATENTED) assures most dependable, lubrication!



Check these famous traditional Spring-Pak Features!

TUFTED COTTON COVER is of special long-wearing loop-woven material. Loops are securely anchored. Its continuous wicking action prevents glazing or sticking to journal, even in sub-zero weather.

OIL RESERVOIR of rugged highly absorbent felt holds oil entirely around pad, providing an abundant supply of oil just beneath the cover.

THREE YEARS in actual service has proved that this combination of tufted cotton cover and heavy felt assures long life with regular reclamations.

LEADER IN THE LUBRICATION FIELD FOR OVER 43 YEARS

SPRING PACKING CORPORATION

John T. Landreth, President

332 South Michigan Avenue Chicago 4, Illinois

CONDITIONALLY APPROVED A.A.R.

1000w Wide-Lites equipped with no-glare color-corrected mercury-vapor lamps atop 70 foot poles provide the lighting for the HB&T 400-500 ft. x 4600 ft. South Yard. The wide spreading beam is aimed 22½° downward so that yard workmen never need look directly into the floodlights. Ground level illumination is 2 foot-candles, compared to 1 foot-candle of a similar incandescent lamp system. Get WIDE-LITE—it saves men and saves money.

INJURY TIME-LOSSES CUT 90%

WITH WIDE-LITE FLOODLIGHTING

VIA GRAYBAR

For three years now at the south switch-yard of the Houston Belt and Terminal Railway Company, a modern WIDE-LITE* installation has been lighting the yard and protecting workmen. Man-hour losses through accident have been substantially reduced. There is plenty of light in the danger spots, and the men can do their work safely. Car numbers, for example, can be read safely, accurately and quickly.

Other leading roads from coast to coast have found that, in the light of the savings, the cost of a WIDE-LITE system is nominal. Let the Graybar representative in your area come in and arrange for a survey of your lighting needs. Write or phone today.

*Registered trade mark of the Wide-Lite Corporation, Houston, Texas.

WIDE-LITE is typical of the modern, high efficiency lighting systems available nationally through Graybar.

GraybaR

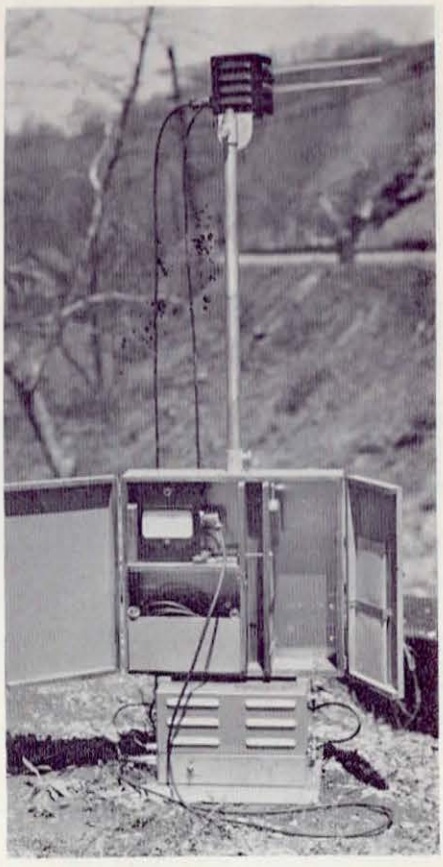
ELECTRIC COMPANY, INC.

Graybar Everything Electrical Graybar Electric Company

963

420 Lexington Avenue, New York 17, N. Y. • In over 130 principal cities

(*Continued from page 33*)



Speed Detector

A radar speed meter, operating on a frequency of 10.525 mc, has an accuracy of —1 mph, +0 mph at 50 mph and —2 mph, +0 mph at 100 mph. The portable unit with its power supply operating off a 12-volt battery, can be set up along the right-of-way or remote from it. The meter can check the speed of trains for a distance of 1,600 ft or more, and has 3 ranges for shorter distances. *Railroad Materials Corp., Dept. RA, 30 Church St., New York 7, N.Y.*

Wire Connector

Scotchlok, type UR, is a self-stripping wire connector that splices, insulates and moisture seals in two simple steps. The connector will accommodate any two- or three-wire combination of No. 19 to No. 26 AWG solid, or No. 20 to No. 26 AWG stranded, wire, and handles all common types of insulation.

Wires are inserted into the connector and secured by squeezing a button into the connector sleeve. As the button is depressed, the finger-like connector element strips the insulation and grips the conductors, providing a strong joint. The thermoplastic sleeve insulates and protects the splice, and the silicone

grease moisture-seals the joint.

A lightweight crimping tool (model E-9 series) with parallel-action jaws will speed application and insure complete actuation of the connector. Splices made with the connector on cable up to 400-pair in size will fit into splice cases and enclosures currently in use. *Minnesota Mining & Mfg., Co., Dept. RA, 900 Bush Ave., St. Paul 6, Minn.*

Track Cart

Trakart No. 640-1 may be used on the track for carrying tools and signal material from the nearest highway crossing to signal locations. The unit is made of aluminum alloy, weighs approximately 30 lb and has a capacity of 750 lb. The flanged guide wheels are ball bearing mounted, and are insulated. When not in use, the outrigger arm can be carrying handle. *Railroad Accessories Corp., Dept. RA, 405 Lexington Ave., New York 17, N.Y.*

Position Detector

A photoelectric detector can spot changes in position as small as ½ in. Such a device might be used as a high-load detector for protection of overhead bridges. The system uses a photo cell and a telescopic light-sensing unit. It can operate for distances over 100 ft, and without telescope to about 30 ft. If alinement changes by ½ in., the unit de-energizes. *Rails Company, Dept. RA, 187 Maplewood Ave., Maplewood, N.J.*

Primary Battery

The new primary battery type RE-1000 is a renewable carbon battery that delivers 1,000 ah using any AAR standard 500-ah jar of round or barrel shape. Average closed circuit voltage is 1.1 to 1.3 volts. Maximum recommended continuous discharge rates are 1.5 amp at 75 deg. F solution temperature; and 1.2 amp at 25 deg. F solution temperature to 1.0 volt cutoff. *Thomas A. Edison Industries, Primary Battery Division, Dept. RA, Bloomfield, N.J.*

Signal Battery

Design changes in the Nicad signal battery include perforated flat steel pockets which retain the active material and are assembled into many thin, but strong, plates. Large plate areas, low internal resistance and the nickel cadmium electro-chemical system gives the battery low float voltage, high average discharge voltage and high rate discharge ability. *Nicad Division, Gould-National Batteries, Inc., Dept. RA, 172 Pleasant St., Easthampton, Mass.*

Campcars put the work crew where the work is

. . . in comfort
. . . with economy

House your maintenance crews adjacent to the job — not miles away with a costly loss of payroll eaten up in transit. Campcars provide comfortable on-the-job living for from 2 to 50 men. What's more, they are ruggedly built for on- or off-highway travel, will give long years of service with no wallet-walloping overhead of their own. If you are out to save maintenance money and get jobs done faster, get the complete story of Campcars. Write International Car Division, 2485 Walden Avenue, Buffalo 25, N. Y.

MORRISON-INTERNATIONAL CORP.

Campcars

A SUBSIDIARY OF RYDER SYSTEM, INC.

People in the News

Paul D. Shoemaker
AWR

M. O. Woxland
NP

ASSOCIATION OF WESTERN RAILWAYS.—Paul D. Shoemaker, assistant to director of public relations, Chicago, appointed director of public relations there, to succeed **Harold M. Sims,** retired (RA, Sept. 5, p. 32).

ATLANTIC COAST LINE.—The following division engineers appointed, effective Oct. 1: **R. R. Pregnall, Jr.,** Richmond division, Rocky Mount, S. C.; **H. P. White,** Charleston division, Florence, S. C.; **T. C. Herndon,** Western Carolina Division, Augusta, Ga.; **L. H. Kelley,** Waycross division, Waycross, Ga.; **J. L. Williams,** Ocala division, Ocala, Fla.; **A. C. Parker, Jr.,** Tampa division, Tampa, Fla.; and **A. C. Low, Jr.,** Western division, Atlanta, Ga.

M. B. Oliver, J. L. Hodges and **W. B. Seymour** appointed assistant directors of labor relations, Jacksonville, Fla. **E. J. Busch** named assistant to director of labor relations.

BALTIMORE & OHIO.—Charles E. Windisch, assistant general freight agent (system), Baltimore, Md., appointed general freight agent (rates-system) there.

CANADIAN NATIONAL.—Harry J. Nevin, assistant general sales manager—passenger, retired.

Reclassification of titles of senior executives in the sales department has been announced. **E. A. Ryder,** deputy vice president—traffic, becomes deputy vice president—sales. **G. R. Johnston,** general freight traffic manager, named general sales manager—freight. **C. E. Dobson,** assistant freight traffic manager—rates, becomes manager—freight rates. **Henry W. Craig,** traffic manager—foreign freight, named manager—foreign freight—sales. **Pierre Delagrave,** general passenger traffic manager, named general sales manager—passenger. **P. G. Edwards** appointed manager—passenger sales. **W. G. Hinkel** named manager—passenger promotion. **J. N. Vincent** appointed manager passenger train services.

CENTRAL OF GEORGIA.—L. H. Wilson appointed division freight agent, Macon, Ga., succeeding **Paul Grahl,** resigned.

CHESAPEAKE & OHIO.—Doyle S. Morris, assistant general counsel, Cleveland, appointed a general solicitor there. **John W. Hanifin,** general commerce attorney, Richmond, Va., named assistant general counsel there.

CHICAGO & EASTERN ILLINOIS.—Joseph Cibulka, assistant freight traffic manager, Chicago, and **A. K. Church,** assistant general freight agent, Evansville, Ind., retired.

CHICAGO & NORTH WESTERN.—The Tacoma, Wash., office has been moved from the Tacoma Building, 1015 A Street, to 1014 Rust Building, 950 Pacific Avenue, Tacoma 2.

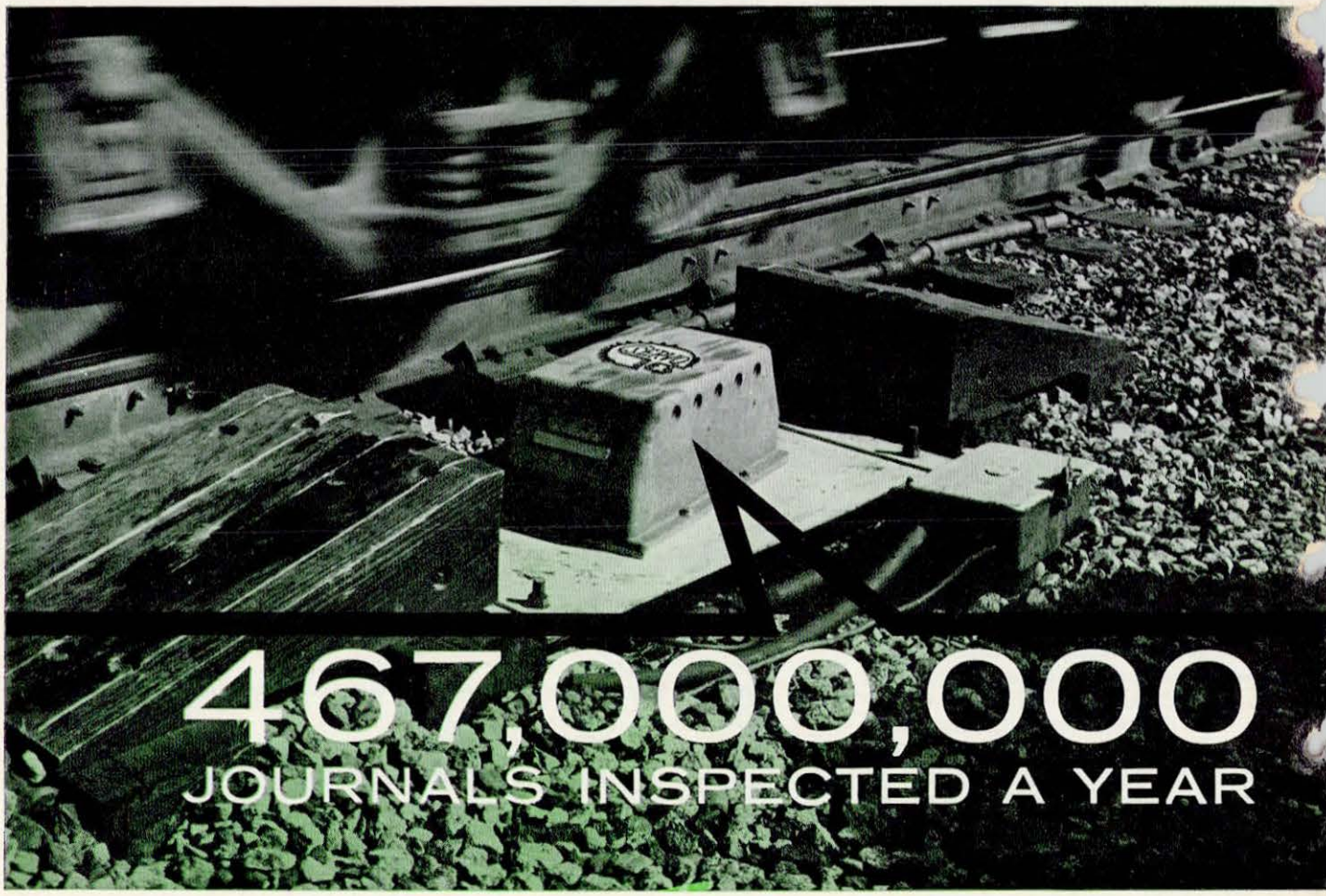
COTTON BELT.—William F. Mahoney appointed general agent, Boston, Mass., succeeding **J. P. Keyes,** who retired Sept. 30.

DETROIT, TOLEDO & IRONTON.—Allan C. Hunter appointed general Canadian agent, 69 Yonge Street, Toronto, Ont., Can., succeeding **J. B. Cook,** resigned. **William R. Pell** succeeds Mr. Hunter as Canadian traffic representative.

JERSEY CENTRAL.—Philip M. Kelly, comptroller, Jersey City, N. J., retired July 31. **R. E. Thompson,** who has been in charge of the department as chief accounting officer, continues in that capacity as comptroller. **R. A. Daley,** general auditor, named assistant comptroller. **J. A. Dinsmore,** assistant general auditor, named general auditor.

LACKAWANNA.—William J. Nolan, freight traffic manager, Central territory, New York, retired Sept. 30.

MILWAUKEE.—William P. Heuel, assistant vice



president—finance and accounting, Chicago, retired Sept. 30.

E. J. Linden, assistant auditor of station accounts and overcharge claims, appointed assistant auditor of freight accounts.

MISSOURI-KANSAS-TEXAS.—Joseph E. Vordtriede, assistant correspondence clerk, St. Louis, appointed sales representative, Oklahoma City, Okla.

NEW YORK CENTRAL.—William J. Kernan, district engineer, Syracuse, N. Y., named assistant engineer—maintenance of way on the staff of engineer—maintenance of way. **Harry B. Berkshire,** assistant district engineer, Detroit, Mich., named district engineer there, succeeding **Charles T. Popma** (RA, Aug. 8, p. 31). **Paul K. Cruckshank,** division engineer, Jackson, Mich., succeeds Mr. Berkshire.

Frank J. Steele, acting district transportation superintendent, Cleveland, promoted to district transportation superindent, there, succeeding **Richard B. Hasselman** (RA, July 25, p. 64). **Edward D. Foley,** trainmaster, Toledo Terminal, appointed terminal superintendent, Elkhart, Ind.

Robert J. Parsons, master mechanic, Weehawken, N. J., transferred to Indianapolis, succeeding **Francis A. Danahy,** whose transfer to Utica, N.Y., was reported in RA, Aug. 8, p. 31.

J. Louis Sturtz, district freight sales manager, Dallas, Tex., named division freight sales manager, Louisville, Ky., succeeding **Joseph P. Roth,** transferred to Cincinnati. **George E. Harrington,** division freight sales manager, Rochester, transferred to Syracuse. **Frank J. Slattery,** district freight salesman, St. Louis, named district freight sales manager, Dallas.

NORTHERN PACIFIC.—M. O. Woxland, assistant bridge engineer, Seattle, appointed bridge engineer, St. Paul, to succeed **C. E. Ekberg,** who retired Sept. 1. **L. L. George,** office engineer, Seattle, named to succeed Mr. Woxland, and in turn is replaced by **R. P. Cooley,** assistant architect, Seattle.

W. E. Taylor, assistant general freight agent, St. Paul, named assistant general freight and passenger agent, Fargo, N. D., succeeding **R. C. Murphy,** who retired Oct. 1.

READING.—Arthur T. Wilkinson, assistant auditor of revenues, appointed auditor of revenues, Philadelphia, Pa., succeeding **Harry L. Muhler,** retired. **Frederick A. Riley, Jr.,** assistant to auditor of revenues, succeeds Mr. Wilkinson, and his former position abolished.

SANTA FE.—L. A. Havener, assistant to freight traffic manager, Los Angeles, Calif., appointed general freight agent there, succeeding **E. W. Martin,** who retired Sept. 30. **F. J. O'Drain** succeeds Mr. Havener.

SEABOARD.—C. M. Bonner, assistant freight traffic manager, Charlotte, N. C., retired.

SOUTHERN PACIFIC.—T. L. Fuller appointed engineer of bridges, San Francisco, succeeding **V. R. Cooledge,** who retired Sept. 30.

Supply Trade

Leroy R. Beck, technical engineer, service department, **Electro-Motive Division** of **General Motors,** has been appointed sales engineer. **Norman C. Steinberger,** senior project engineer, engineering department, has been named application engineer, product application section of the sales department.

William Lucht, manager of distributors' sales, Industrial Division, **Aeroquip Corp.,** has been appointed railroad sales manager, succeeding **Richard D. Hitt,** who has been appointed eastern sales manager, General Logistics Division, Jackson, Mich.

The following sales representatives have been promoted to assistant district managers by **Dearborn Chemical Co.: J. D. Gill,** eastern district; **C. D. Schroeder,** Illinois-Wisconsin district; and **W. W. Morris,** Pittsburgh district.

Charles J. Hurst has been appointed sales representative, **Pullman-Standard,** a division of Pullman Inc. Mr. Hurst was formerly assistant manager of P-S's sales and service engineering division.

American Air Filter Co., Louisville, Ky., has appointed **Robert M. Close, St. Louis Railway Supply Co.,** Railway Exchange Building, St. Louis, Mo., as its sales representative in the Southwest for air filters for railroad locomotive and car applications. Mr. Close will be assisted by his brother, **Jack Close.**

E. P. O'Neill has been appointed assistant general sales manager, Hyatt Bearings Division, **General Motors,** Harrison, N. J. Mr. O'Neill, who was formerly manager of the Harrison Zone office, will direct activities of Hyatt railroad sales representatives throughout the country. **F. U. Naughton, Jr.,** manager of railroad sales, has been appointed to a new position of manager, special railroad accounts.

by SERVOSAFE® Hot Box Detectives*

Inspecting almost a half-billion bearings a year...That's a lot of bearings. Yet figure that there are now more than 200 SERVOSAFE® Hot Box Detectives* in successful operation on 26 major Class I railroads across the country — and 467,000,000 actually becomes a very conservative figure.

On one big Eastern road alone, where Detectives are installed on a system-wide basis, it is estimated that these sensitive infrared eyes look at an average of 60,000,000 journals a year. The equipment is operating and in service 99.7 per cent of the time. In one year, over 3,700 hot boxes were caught in time to avert burned-out bearings, derailments, serious wrecks. Think of what this means in dollars saved.

Railroads are reporting better than 90 per cent efficiency using SERVOSAFE Hot Box Detectives . . . in some instances as high as 100 per cent.

Take the tremendous fund of knowledge massed by Servo railroad electronic specialists over the past 8 years pioneering the SERVOSAFE Hot Box Detective and its five flexible expanded System Groupings. Reinforce this technical knowledge with actual day-to-day experience working on the railroads. Add the fact that Servo field application engineers and service specialists are strategically spotted across the country to serve you.

You get the benefit of this tremendous reserve of talent and experience only when you specify SERVOSAFE. It pays to be safe . . . SERVOSAFE. It is the only patented, proved hot box detection equipment available today.

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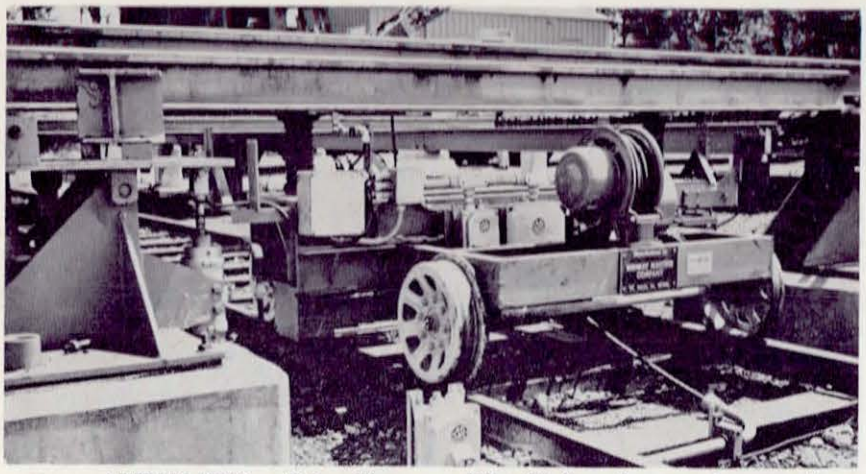
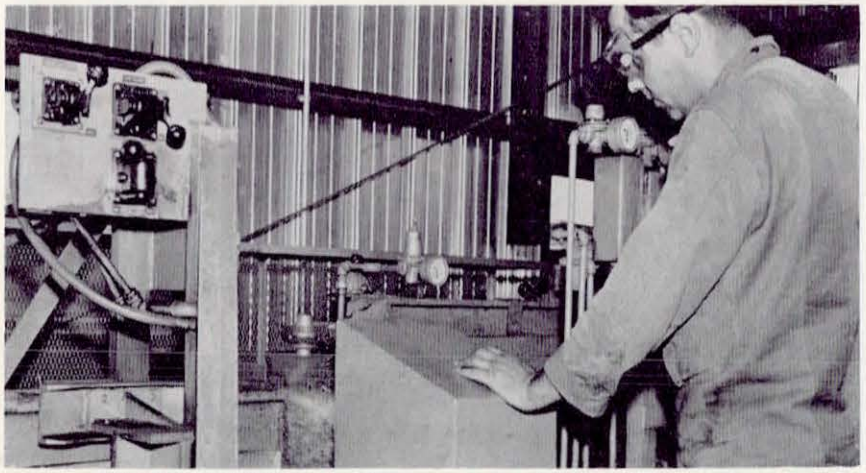
RAILROAD RADIO COMMUNICATIONS SYSTEMS

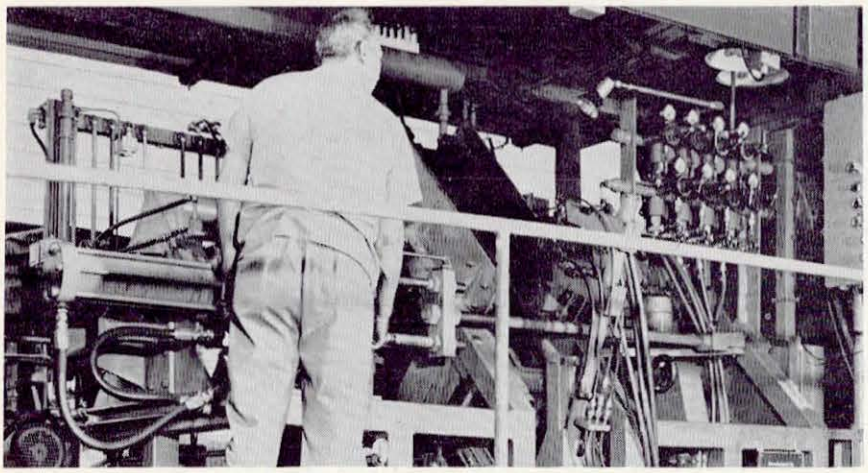
Automated Equipment Cuts Rai



1 **AUTOMATIC** rail-handling car lifts 39-ft rails, one by one, from storage rack and deposits them on production line as needed. Car then goes back for another rail.



2 **END-FINISHING** machine squares ends of rails in preparation for welding. Abrasive belts are used. Amount of metal to be removed from rail end can be adjusted, depending on condition of rail.



3 **WELDING MACHINE** has been improved to speed up the operation and obtain increased automation. Push buttons now control the operations of alining, clamping and welding the rails.

► The Story at a Glance: Major improvements in equipment for butt-welding rails by the oxy-acetylene pressure method have been announced by Linde Company, Division of Union Carbide Corporation. Result of the improvements has been to speed welding time and to cut manpower requirements by about 60%, according to the company.

Units incorporating the newly announced improvements have been installed in the fixed welding plants Linde has built at Harrisburg, Pa., and at Ensley, Ala. The new equipment is also available for lease by railroads.

Improvements recently announced in Linde Company equipment for producing butt-welded rail by the oxy-acetylene pressure process were aimed at a high degree of automation, according to company spokesmen.

The automation starts at the beginning of the production line. An automatic motor-driven rail-handling car, or "buggy," operating on a transverse track, lifts single rails from storage skids and carries them to the production line at 40 ft per min. There the car holds the rail until it is needed, after which it deposits the rail on power rollers that lead to the welder. The buggy then shuttles back to the rack to select the next rail to be welded.

All these movements of the buggy are performed automatically. Such control is achieved primarily by means of limit switches designed on a "fail-safe" basis. For example, if a workman should accidentally get in the way of the buggy it will immediately stop.

A rail placed on the production line is moved automatically by power rollers to the end finisher. The finisher squares up the rail ends in preparation for the welding process. This operation is performed by abrasive belts.

Squaring Handled by One Man

After the leading end of the rail has been squared, the rail is moved forward to permit the trailing end to be finished by another grinder at the same location. The squaring operation is handled by one man.

Adjustable guide plates at the end finisher make it possible to vary the amount of material removed from rail ends during the grinding operation. A company spokesman points out that this may be about .02 in. for new rail and .04 in. for secondhand rail.

Butt-Welding Time and Labor

The welding machine, next unit in the production line, has been improved to speed up the operation and to obtain increased automation. A rail brought into this machine is abutted against the trailing end of the previously welded rail.

The two rails are alined by a series of hydraulic dies. Gags fitted with rollers then hold the rail ends in position while they are welded.

In this operation an end pressure of approximately 3,000 psi is applied while an oscillating welding head, surrounding the rail ends, heats the metal to the plastic state.

All operations involved in preparing for making a weld—actuating dies and gags and setting the clamps that apply the pressure—are controlled by push buttons.

Other push buttons are used to release the dies, place the welding head in position, light the torches and start the oscillating motion of the head. When the upsetting action reaches a predetermined amount, the torches are extinguished automatically. One man is stationed at the welding machine.

Moved by Pinch Rollers

Beyond the welder, the lengths of welded rail are moved forward (or backward if necessary) by three motor-operated pinch rollers. Automatic controls at the rollers are designed to equalize the load between them.

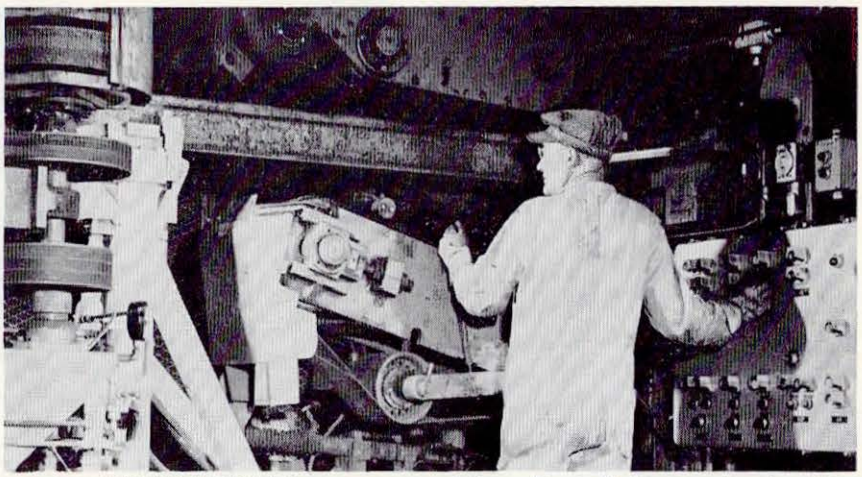
When a weld has been completed, the length of welded rail is advanced by the pinch rollers enough to position the new weld at the grinding machine. In this unit, operated by one man, abrasive belts remove excess upset metal at the weld.

The grinding machine is mounted in a carriage. Hence, it may be moved back and forth lengthwise with the rail as the different belts for grinding various parts of the rail section are brought into play.

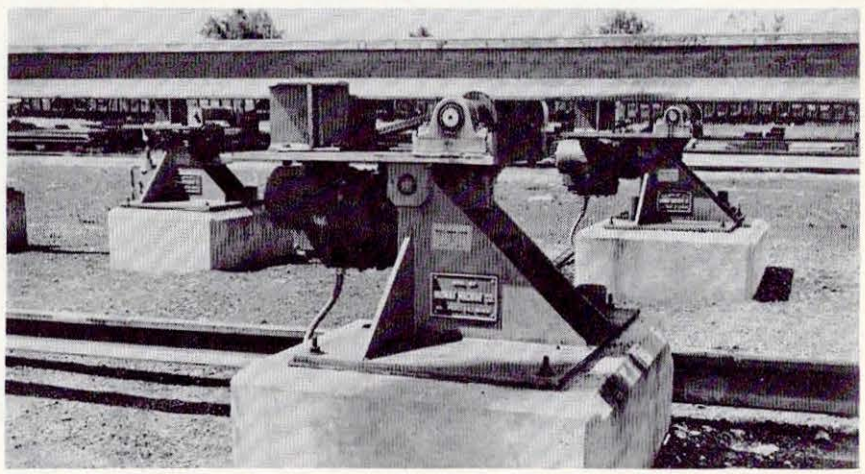
The joints are inspected and finish ground in the usual manner. No change has been made in the normalizing operation, now considered optional.

Units of the new and improved types of equipment, according to Linde spokesmen, have been incorporated in the fixed welding plants the company has built at Harrisburg, Pa., and Ensley, Ala.

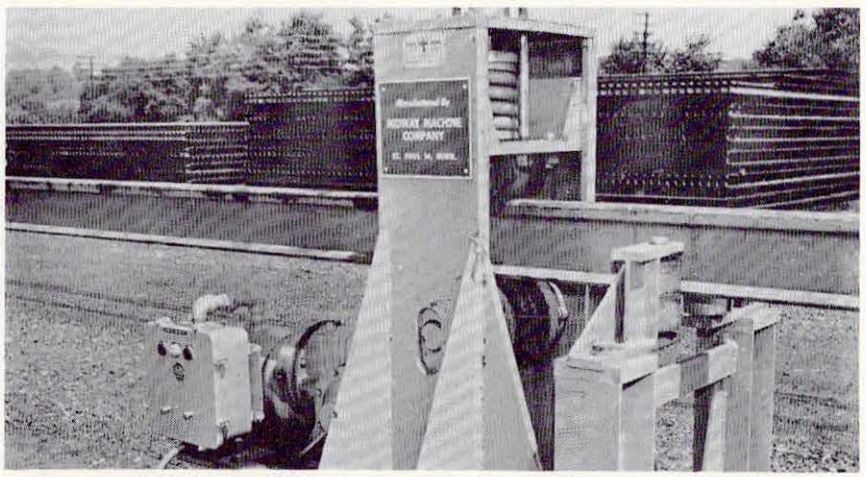
The equipment is also available for lease to railroads for operation by railroad personnel.



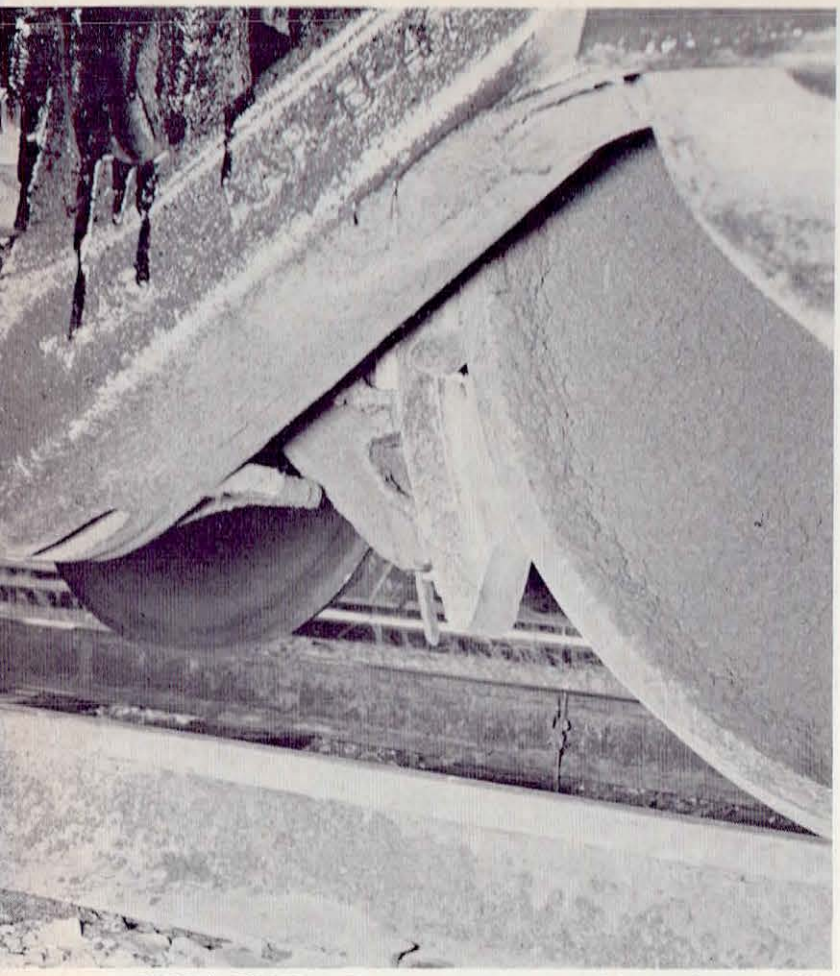
4 **UPSET METAL** is now removed from the ball, base and web of the welded joint by this grinding machine which, like the end-finisher, utilizes abrasive belts.



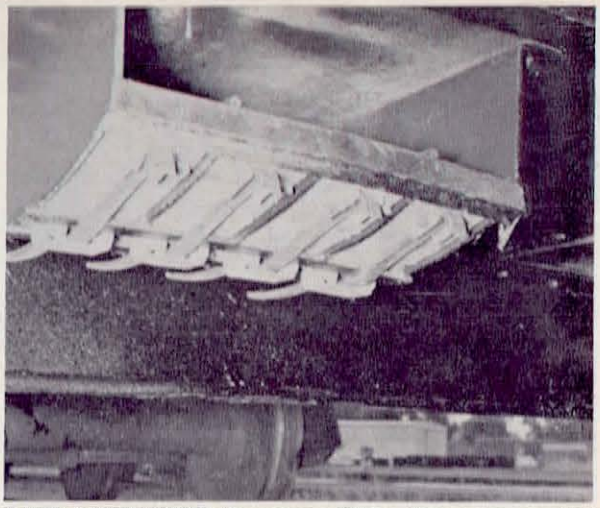
5 **POWER ROLLERS** move individual rails forward to various stations until they reach the welding machine. A rail in the machine is abutted against the trailing end of previously welded rail.



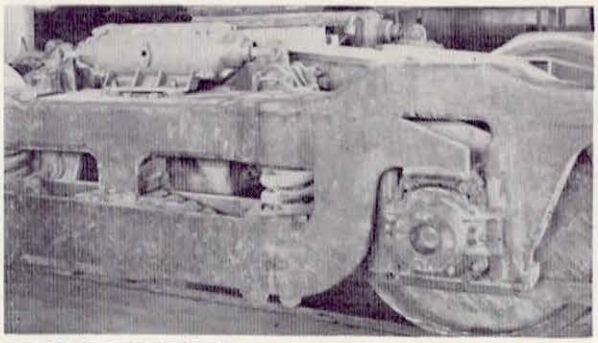
6 **MOTOR-OPERATED** pinch rollers move the welded lengths of rail forward (or backward) as necessary. Automatic controls equalize the load between these rollers.



COBRA SHOE application on 70-ton gondola involved modifying brake head so cast-iron shoes cannot be used.



REPLACEMENTS for composition shoes are carried in rack under gondola floor and are held by brake shoe keys to prevent loss when dumping.



BRAKE CYLINDERS on switcher trucks were replaced with smaller size to reduce braking force.

C&IM Saves with Cobra Shoes

► **The Story at a Glance: Composition shoes on Chicago & Illinois Midland locomotives are lasting four times as long as cast-iron shoes. Moreover, flat spots and thermal cracking of wheels have been eliminated.**

Plain V-103 Cobra composition brake shoes were applied for test to the Chicago & Illinois Midland's EMD SW-1200 switcher No. 20 on November 22, 1957. Today, the road's entire fleet of 13 switchers and road-switchers are so equipped. Based on the excellent results obtained with the locomotive installations, Cobra V-101 shoes were applied in July 1960 to ten 70-ton gondolas in coal service.

The C&IM used several methods to reduce the braking force because of the higher coefficient of friction of the composition shoes. In the application to switcher No. 20, the four 11-in. duplex brake cylinders were replaced with four 7-in. duplex cylinders. The independent brake pressure was increased from 30 to 50 lb. Brake heads were modified to accommodate the composition shoe. The locomotive was previously equipped with A-28 cast iron flanged shoes and assigned to a mine-run territory involving heavy braking and switching of 70-ton loads at slow speeds. Under these operating conditions, the ratio was 5 to 1 in favor of the composition shoe. Large amounts of sand were required to prevent locking of wheels. With the use of composition shoes, sand consumption decreased.

Considerable savings were realized, as elevated sand facilities were not available at that outlying point.

In June 1958, the six SW-1200's (including No. 20) were equipped with V-128 flanged composition shoes. Since then, the use of emery shoes has not been required as flat spots have not been a problem. In March 1959, the five SD-9 road switchers were equipped with the plain V-103 shoe. A J-16 pressure stepdown relay valve was applied instead of rebushing the 12 brake cylinders. The two RS-1325's to be delivered in October will be equipped with V103 shoes and 6½-in. brake cylinders to provide the proper brake shoe force. The gondola conversion was done by changes in brake levers.

According to C&IM officers, the constant friction characteristic of the Cobra composition shoe has prevented wheel sliding. The road has found indications that wheel slippage may have been reduced on heavy grades after the wheels become polished by the shoes. One operation in Springfield, Ill., involved the switching of partial loads in box cars inside the Pillsbury Mills plant. With composition - shoe - equipped locomotives, these partial loads are switched with less shifting of lading.

MARKET OUTLOOK *at a glance*

Carloadings Rise 2.3% Above Previous Week's

Loadings of revenue freight in the week ended Oct. 1 totaled 631,645 cars, the Association of American Railroads announced on Oct. 6. This was an increase of 14,010 cars, or 2.3%, compared with the previous week; an increase of 59,293 cars, or 10.4%, compared with the corresponding week last year; and a decrease of 45,980 cars, or 6.8%, compared with the equivalent 1958 week.

Loadings of revenue freight for the week ended Sept. 24 totaled 617,635 cars; the summary, compiled by the Car Service Division, AAR, follows:

REVENUE FREIGHT CARLOADINGS
For the week ended Saturday, Sept. 24

District	1960	1959	1958
Eastern	88,140	89,714	96,063
Allegheny	98,880	86,944	117,286
Pocahontas	50,752	49,864	57,778
Southern	114,611	120,963	120,255
Northwestern	96,566	68,218	104,951
Central Western	116,586	117,549	128,377
Southwestern	52,100	54,359	48,670
Total Western Districts	265,252	240,126	281,998
Total All Roads	617,635	587,611	673,380
Commodities:			
Grain and grain products	54,037	54,005	57,067
Livestock	7,745	9,720	10,071
Coal	108,789	107,689	125,021
Coke	5,440	2,976	7,065
Forest Products	40,615	43,906	40,309
Ore	50,558	8,481	57,407
Merchandise l.c.l.	36,521	43,303	50,251
Miscellaneous	313,930	317,531	326,189
Sept. 24	617,635	587,611	673,380
Sept. 17	598,716	577,457	667,760
Sept. 10	481,057	477,616	666,223
Sept. 3	577,090	547,806	563,725
Aug. 27	594,770	548,877	646,226
Cumulative total, 38 weeks	22,647,026	22,845,712	21,693,793

PIGGYBACK CARLOADINGS.—U. S. piggyback loadings for the week ended Sept. 24 totaled 11,891 cars, compared with 9,116 for the corresponding 1959 week. Loadings for 1960 up to Sept. 24 totaled 402,735 cars, compared with 299,801 for the corresponding period of 1959.

IN CANADA.—Carloadings for the seven-day period ended Sept. 21 totaled 78,650 cars, compared with 76,620 for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada		
Sept. 21, 1960	78,650	25,700
Sept. 21, 1959	87,142	26,713
Cumulative Totals		
Sept. 21, 1960	2,671,823	1,018,710
Sept. 21, 1959	2,764,430	1,014,475

New Equipment

FREIGHT-TRAIN CARS

► *Burlington.*—Freight car program for 1961 includes construction and purchase of 1,385 cars all equipped with roller bearings. Total cost of the system's equipment program will be $22,250,000, including cost of 36 new locomotives (see below). Havelock, Neb., company shops will build 600 box cars, including 250 insulated cars and 50 plain box equipped with lading protection devices and cushion underframes; 350 covered hopper cars; 50 bulkhead flat cars and 50 flats. An additional 50 covered hoppers (Airslide and Dry-Flo) will be purchased from General American. Burlington affiliates Colorado & Southern and Fort Worth & Denver will acquire 285 cars, including 25 50-ft 70-ton insulated box cars, 150 70-ton all steel hopper cars, 100 70-ton mill type steel gondola cars to be built at Havelock and ten (Dry-Flo) to be purchased from General American.

► *Canadian National.*—Ordered 50 40-ton, 40-ft steel flat cars for service in Newfoundland from Dominion Steel Corp.

► *Pittsburgh & Lake Erie.*—Ordered 550 70-ton hoppers from Despatch Shops. Deliveries are slated to begin this month.

LOCOMOTIVES

► *Burlington.*—Equipment program for 1961 includes purchase of 36 2,000-hp GP20 road switchers from Electro-Motive Division.

PIGGYBACK

► *Canadian Pacific.*—Will receive delivery of 150 46-ft piggyback flat cars between now and the end of October from National Car. Forty 54-ft piggyback flat cars will be delivered by Canadian Car in November.

► *Trailer Train.*—Board of directors has authorized orders for 1,000 new king-sized piggyback flat cars to cost about $13,000,000. Eight hundred will be built by ACF, Pullman-Standard, and Bethlehem steel. They will be of 85-ft roller-bearing design. Consideration is being given to designating that the remaining 200 cars be of a newly designed type developed by Pullman-Standard with a lower-than-normal floor level. Deliveries will begin this month and be completed in December.

SPECIAL

► *Wabash.*—Ordered 175 tri-level and 25 bi-level automobile racks from Paragon Bridge and Steel Co. at a cost of approximately $1,600,000. Racks will be attached to TTX flat cars. Special-design ramps with multi-level lifting devices manufactured by Buck Equipment Corp. have been installed at Kansas City, Mo., South Bend, Ind., and Detroit, Mich. Stationary-type multi-level ramps (for unloading only) will be built at St. Louis, Mo., Des Moines and Council Bluffs, Iowa.

► *Western Pacific.*—Authorized construction of piggyback loading facilities at Milpitas, Calif., at a cost of $55,500.

Short Lines Elect Huntley

The American Short Line Railroad Association at its 47th Annual National Convention at Green Bay, Wis., last week chose C. E. Huntley to succeed James M. Hood as president. Mr. Hood, president of ASLRA since 1935, announced his retirement effective December 31. Mr. Huntley is currently vice president-secretary-treasurer of the organization.

Speaking at the Short Line convention, Daniel P. Loomis, president, Association of American Railroads, paid testimony to Mr. Hood's "unparalleled work in Washington and stewardship on behalf of our industry" over the last quarter-century. "His guardianship of the theory of private enterprise," said Mr. Loomis, "and his determination to have all forms of transportation treated equally by government have been powerful allies in our efforts to obtain a more favorable legislative climate for railroads." Mr. Loomis added that "massive, fumbling government intervention in the internal affairs of all forms of transportation" is the main cause of the railroad industry's problems today.

Clyde E. Herring, Interstate Commerce Commission member; Howard W. Habermeyer, chairman, Railroad Retirement Board; and Francis A. O'Neill, Jr., chairman, National Mediation Board, addressed the general session of the convention. Mr. O'Neill, outlining the activities of the National Mediation Board, remarked that it was significant that the main wage settlement of 1960, following the three year moratorium, came as a result of voluntary arbitration.

Payments under the Railroad Retirement Act, Mr. Habermeyer pointed out, now amount to about $81 million a month. He said that nearly 800,000 railroad employees or their survivors are now receiving retirement, unemployment or sickness benefits.

Mr. Herring described commission responsibilities in rate investigations. While he admitted that there are some cases that may be decided by considering only out-of-pocket costs he remarked that "relative inherent advantages of various modes of transportation should be determined by a consideration of all cost factors involved."

Reelected regional vice presidents for the coming year by the association directors were J. S. Babbitt, Southwestern Region, V. M. Bushman, Western Region, L. A. Putnam, Eastern Region, C. D. Cotten, Jr. Southern Region. R. K. Heineman, president of the Alton & Southern, was elected a director of the Western Region and R. J. Morton and D. C. Luce were elected directors of the Southern Region.

Thomas M. Healy, management member of the Railroad Retirement Board, called for amendments to the Railroad Unemployment Insurance Act "to correct the inequities which have placed burdens upon the lifeline of the nation greatly in excess of other industries."

Speaking at the closing session of the convention, Clair M. Roddewig, president of the Association of Western Railways, listed nine areas of concern for the nation's railroads. "These result primarily," said Mr. Roddewig, "from the heavy hand of government on the affairs of the railroad industry. This heavy hand is largely responsible for the failure of the railroad industry to share equally in the growth and prosperity of this nation's expanding economy."

A feature of the convention was the dedication of the Short Line Memorial Building at the National Railroad Museum in Green Bay. The building will be known as "Hood Junction" as a testimonial to the association's retiring president.

Symes Sees Mergers 'Best Hope'

The railroad industry's best hope for a prosperous future lies in large-scale mergers, James M. Symes, PRR chairman told a convention of southern business leaders last week. Mr. Symes spoke at the annual conference of the Southern Research Institute, which at this year's meeting was concentrating on future trends in transport.

"The present jumble of a hundred or so railroads should be slimmed down to somewhere between seven and eleven streamlined systems," Mr. Symes said. "There should be two or possibly three such systems in the North, somewhere between three and six in the far more extensive West, and two in the South," Mr. Symes continued, adding, "I believe if you look closely you will see that is how things are already tending."

The exact number of systems is unimportant, though, Mr. Symes said. "Once this thing gets rolling, details like that will settle themselves," he told the business leaders.

After enumerating some reasons why earlier merger efforts had failed, Mr. Symes added a warning.

"This time, he said, "the railroads had better not let anything or anybody inside or outside the industry keep them again from setting their house in order. If we do, the Federal government will step in and do the job—and stay in. And you can be pretty sure, I think, that nationalization would not stop with the railroads. The rest of transport would have to be taken over by Washington too—and other industry might very well be next. This is more than a matter of which railroad acquires which, for how much. An industry, all industry, and a way of life are at stake here—and we had better realize it."

Mr. Symes said that he thought government seemed to be following a hands-off policy with regard to mergers.

"They're not beating the drums for the movement," he said, "but they're not doing anything that I know of to hold it back, either. When you get Washington not interfering with railroad progress, you have really got something —and I think that's what we have as far as mergers are concerned."

Simplified Rate Structure Seen Containerization Gain

Containerization, with all its well publicized benefits, is growing relatively slowly in coordinated service. With this prelude, Railway Express Agency International Services Vice President Anthony F. Arpaia asked a symposium on cargo handling: "Is concern about the relatively slow growth of container use in coordinated service a valid one?"

"I believe it is," the former Interstate Commerce commissioner told the audience of shippers and cargo handling experts. "Let us not be misled by the dramatic growth which . . . [figures, averages and statistics] seem to indicate. The real question is how much containerized traffic was interchanged with other carriers—even of the same mode?"

To shippers, who are concerned with transportation rather than any of its components: railroads, trucks, buses, barges, airplanes, etc., a "strong and determined acceptance of the principle of integration of all the services of transportation" is becoming more and more logical, Mr. Arpaia pointed out.

"It should be amply clear that con-

ERIE-LACKAWANNA: COURT NEXT? *(Continued from page 9)*

situation to commit the employees to such an obligation." As to Mr. Alpert's warning that the alternative would be "mass lay-offs," RLEA expressed hope for the NH president's "cooperation in avoiding the imposition of the burden of your financial distress on employees whom you need, who need their jobs, and whose services are needed" by NH patrons.

Mr. Leighty told reporters at his press conference that he thought the NH would get help in the form of tax relief or loans.

Asked how the refusal to help NH squared with the general labor claim that employees should share in the fortunes of a business, the RLEA chairman replied that employees might be willing to share bad times as well as good if a profit-sharing arrangement were in effect. He hastened to add that "we'd want the first such arrangement to come from a going concern."

Also in Washington Sept. 30, Secretary of Labor Mitchell met with six-man subcommittees from the railroads' regional conference committees and the five operating brotherhoods. The meeting involved further discussion of proposals to create a commission to study the work-rules dispute, i.e., the so-called featherbedding controversy. No agreement was reached at the meeting, and another conference was scheduled for Oct. 7, also in Washington.

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ventional techniques have failed," Mr. Arpaia said. "The time has come for radical measures. Integration of service through containerization holds the best promise."

Containerization is not the end of the story, Mr. Arpaia continued, but the beginning of "deeper and more fundamental changes" to make for-hire transportation more attractive to shippers. Chief among these changes Mr. Arpaia placed tariff simplification.

"A radical and fundamental change of technique in computing charges must be found—something which meets the needs of the second half of the Twentieth Century, the keynote of which is speed and efficiency," Mr. Arpaia said, adding that the only practical way to accomplish this is by "revamping the entire concept of rate making."

"What fairer way is there to classify packaged freight," Mr. Arpaia asked, "than through cubic measurements and to make rates on a cube-mile concept with specific accessorial charges where necessary and appropriate?"

Another speaker at the symposium, Daniel S. Sundel of the Piggy-Back Division of General American Transportation Corp., called piggyback "a catalyst . . . in our fast moving economy" that enabled "the railways to tap the mushrooming industrial areas along highways." Describing the piggyback plans now in effect, Mr. Sundel predicted that Plan II carrying rail-billed freight, may "out-distance the other plans if three basic developments take place: (1) use of containers in place of trailers, particularly where the rail haul involves 48 hours or more transit time, (2) blanketing the nation with joint Plan II rates and routes between important piggyback concentration points to serve a radius of 25 or 50 miles . . . and (3) a container pool."

The container pool will be the foundation of an integrated land-sea-air transport system, Mr. Sundel said.

Southern Goes Piggyback

The Southern Railway, long time questioner of piggybacking's profit potential, has apparently resolved its doubts. The road is now moving into piggyback operations in a large way.

The road itself has made no public announcement of its plans, but at least three developments in the past few days suggest something of the road's thinking:

- Southern joined Trailer Train Co., the largest piggyback car pool in the country (RA, Oct. 3, p. 34).
- The road announced acquisition, through a subsidiary, of a "substantial interest" in Republic Carloading & Distributing Co., a nation-wide freight forwarder.
- Three piggyback tariffs filed with ICC became effective September 15, and a fourth goes into effect October 13, barring suspension. The three tariffs already in effect offer to carry only demountable bodies (containers); the fourth offers to carry demounted units or trailers. The service offered is so-called Plan III.

Notwithstanding that under Plan III the shipper furnishes the trailer or container, reports from suppliers say the road has also ordered 110 truck chassis and 110 demountable trailer bodies on its own. It is understood, also, that Southern has arranged to have 34 TTX 85-ft flat cars equipped with Pullman-Standard adapter devices which, in effect, make the cars dual-purpose. The adapter device attaches to the car floor, straddles the two ACF hitch units and provides rubber cushioning for containers; yet it is sufficiently narrow to allow movement of regular highway trailers on the car.

This emphasis on the demountable unit ties in with statements made earlier this year by Southern President Harry A. DeButts.

"Our feeling is that this so-called piggyback thing has been moving in the wrong direction and attention is now being shifted toward a container system," Mr. DeButts said.

Acquisition of an interest in Republic Carloading by Southern's subsidiary, Georgia Industrial Realty Co., seems to tie in with the road's piggybacking plans. A four-paragraph announcement by the Southern included references to Republic's pioneer role in forwarder piggybacking and added that "use of piggyback by Republic will now be further accelerated."

The Southern's tariffs at ICC embrace service between Atlanta, Birmingham, Jacksonville, Miami and New Orleans, on the one hand, and Chicago, Cincinnati, Baltimore, Philadelphia and Kearney, N. J., on the other. PRR is a participating carrier to the three latter cities. The tariff slated to become effective October 13 embraces service between the five southern and southeastern cities and Alexandria, Va.

Piggyback: As Seen From the Trucker's Side

Plan I is "to our benefit," Plan II "we can live with," Plan III could "destroy the entire rate structure as we have it today." With these phrases, Robert E. Cooper, Jr., chairman of Cooper-Jarrett, summarized his firm's feelings about piggyback. Mr. Cooper, speaking before New York's Transportation Research Forum, also commented unfavorably on Plan IV, which he described as a forwarders' plan, but he reserved judgment on Plan V. Noting that the initial use of Plan V was in connection with autos to Texas, Mr. Cooper said: "That may stand or not, but we do feel there is some justification for joint rates with railroads."

"Piggybacking is here to stay," Mr. Cooper told the research forum, "but we feel it should stay only on our terms." Making it clear that these terms excluded Plan III, Mr. Cooper commented that, carried to its logical extremes, Plan III, could destroy all rate making that has existed in the past.

You Ought To Know...

Consolidation of all railroad freight-handling operations and facilities in the Port of New York area has been suggested again. The Port of New York Authority has indicated willingness to study consolidation possibilities.

U.S. delegates to the Tenth Pan American Railway Congress are en route to the meeting to be held in Sao Paulo Oct. 12 to Oct. 27. Under the chairmanship of AAR President D. P. Loomis, the delegation includes ICC Commissioner H. G. Freas, Railway Age Editor J. G. Lyne, PRR Vice President-Operations J. P. Newell and American Train Dispatchers' President R. C. Coutts, plus five advisers and 12 technical advisers representing the U.S. railroad and supply industry.

The role of railway signaling in an era of mergers will be discussed at the annual convention of the Signal Section, AAR, at the Hotel Morrison in Chicago, Oct. 11-13. Other topics of major interest at the meeting will include automatic train operation, signaling on Soviet Railroads, microwave in signaling, hotbox detector maintenance and standardization in the signal field.

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ERIE-LACKAWANNA: COURT NEXT? *(Continued from page 9)*

situation to commit the employees to such an obligation." As to Mr. Alpert's warning that the alternative would be "mass lay-offs," RLEA expressed hope for the NH president's "cooperation in avoiding the imposition of the burden of your financial distress on employees whom you need, who need their jobs, and whose services are needed" by NH patrons.

Mr. Leighty told reporters at his press conference that he thought the NH would get help in the form of tax relief or loans.

Asked how the refusal to help NH squared with the general labor claim that employees should share in the fortunes of a business, the RLEA chairman replied that employees might be willing to share bad times as well as good if a profit-sharing arrangement were in effect. He hastened to add that "we'd want the first such arrangement to come from a going concern."

Also in Washington Sept. 30, Secretary of Labor Mitchell met with six-man subcommittees from the railroads' regional conference committees and the five operating brotherhoods. The meeting involved further discussion of proposals to create a commission to study the work-rules dispute, i.e., the so-called featherbedding controversy. No agreement was reached at the meeting, and another conference was scheduled for Oct. 7, also in Washington.

---

ventional techniques have failed," Mr. Arpaia said. "The time has come for radical measures. Integration of service through containerization holds the best promise."

Containerization is not the end of the story, Mr. Arpaia continued, but the beginning of "deeper and more fundamental changes" to make for-hire transportation more attractive to shippers. Chief among these changes Mr. Arpaia placed tariff simplification.

"A radical and fundamental change of technique in computing charges must be found—something which meets the needs of the second half of the Twentieth Century, the keynote of which is speed and efficiency," Mr. Arpaia said, adding that the only practical way to accomplish this is by "revamping the entire concept of rate making."

"What fairer way is there to classify packaged freight," Mr. Arpaia asked, "than through cubic measurements and to make rates on a cube-mile concept with specific accessorial charges where necessary and appropriate?"

Another speaker at the symposium, Daniel S. Sundel of the Piggy-Back Division of General American Transportation Corp., called piggyback "a catalyst . . . in our fast moving economy" that enabled "the railways to tap the mushrooming industrial areas along highways." Describing the piggyback plans now in effect, Mr. Sundel predicted that Plan II carrying rail-billed freight, may "out-distance the other plans if three basic developments take place: (1) use of containers in place of trailers, particularly where the rail haul involves 48 hours or more transit time, (2) blanketing the nation with joint Plan II rates and routes between important piggyback concentration points to serve a radius of 25 or 50 miles . . . and (3) a container pool."

The container pool will be the foundation of an integrated land-sea-air transport system, Mr. Sundel said.

Southern Goes Piggyback

The Southern Railway, long time questioner of piggybacking's profit potential, has apparently resolved its doubts. The road is now moving into piggyback operations in a large way.

The road itself has made no public announcement of its plans, but at least three developments in the past few days suggest something of the road's thinking:

- Southern joined Trailer Train Co., the largest piggyback car pool in the country (RA, Oct. 3, p. 34).
- The road announced acquisition, through a subsidiary, of a "substantial interest" in Republic Carloading & Distributing Co., a nation-wide freight forwarder.
- Three piggyback tariffs filed with ICC became effective September 15, and a fourth goes into effect October 13, barring suspension. The three tariffs already in effect offer to carry only demountable bodies (containers); the fourth offers to carry demounted units or trailers. The service offered is so-called Plan III.

Notwithstanding that under Plan III the shipper furnishes the trailer or container, reports from suppliers say the road has also ordered 110 truck chassis and 110 demountable trailer bodies on its own. It is understood, also, that Southern has arranged to have 34 TTX 85-ft flat cars equipped with Pullman-Standard adapter devices which, in effect, make the cars dual-purpose. The adapter device attaches to the car floor, straddles the two ACF hitch units and provides rubber cushioning for containers; yet it is sufficiently narrow to allow movement of regular highway trailers on the car.

This emphasis on the demountable unit ties in with statements made earlier this year by Southern President Harry A. DeButts.

"Our feeling is that this so-called piggyback thing has been moving in the wrong direction and attention is now being shifted toward a container system," Mr. DeButts said.

Acquisition of an interest in Republic Carloading by Southern's subsidiary, Georgia Industrial Realty Co., seems to tie in with the road's piggybacking plans. A four-paragraph announcement by the Southern included references to Republic's pioneer role in forwarder piggybacking and added that "use of piggyback by Republic will now be further accelerated."

The Southern's tariffs at ICC embrace service between Atlanta, Birmingham, Jacksonville, Miami and New Orleans, on the one hand, and Chicago, Cincinnati, Baltimore, Philadelphia and Kearney, N. J., on the other. PRR is a participating carrier to the three latter cities. The tariff slated to become effective October 13 embraces service between the five southern and southeastern cities and Alexandria, Va.

Piggyback: As Seen From the Trucker's Side

Plan I is "to our benefit," Plan II "we can live with," Plan III could "destroy the entire rate structure as we have it today." With these phrases, Robert E. Cooper, Jr., chairman of Cooper-Jarrett, summarized his firm's feelings about piggyback. Mr. Cooper, speaking before New York's Transportation Research Forum, also commented unfavorably on Plan IV, which he described as a forwarders' plan, but he reserved judgment on Plan V. Noting that the initial use of Plan V was in connection with autos to Texas, Mr. Cooper said: "That may stand or not, but we do feel there is some justification for joint rates with railroads."

"Piggybacking is here to stay," Mr. Cooper told the research forum, "but we feel it should stay only on our terms." Making it clear that these terms excluded Plan III, Mr. Cooper commented that, carried to its logical extremes, Plan III, could destroy all rate making that has existed in the past.

Automation Aired by RSPA

With today's technology and the logical next-steps, U.S. railroads could reach a degree of automated operation thought impossible not many years ago. The hardware is available—or in developmental stages—in bits and pieces. From a technological standpoint, the problem is to integrate the parts in logical sequence to create the completely automatic railroad.

Blue-sky thinking? Not at all, according to J. W. Hansen, manager, sales promotion and advertising, Union Switch & Signal Division. Railroads, he told the Railway Systems & Procedures Association in Chicago last week, have the physical plant and the operational control to make them uniquely suited to automatic operation. Their progress toward such control might be accomplished in a four-step process:

1) Continue to extend CTC.

2) Add cab signal and train control equipment to provide safety of operation without the need of wayside signals.

3) Install wayside decision-making devices for automatically directing train movements, thus removing routine decision-making operations from the dispatcher.

4) Add the automatic train control servo—which would require the expansion of wayside decision-making devices to provide the precise commands to operate trains automatically.

Steps 1, 2 and 3, Mr. Hansen noted, "can be incorporated in a small or large section anytime with immediate returns in greater operating efficiency. Step 4 would be taken when solutions are found to a number of problems existing today. However, the most difficult of these problems are not engineering problems—they are those involving political, social and personnel aspects of automation."

Among the major advances in automatic operation have been those made by the French National Railroads—first with successful transmittal of information to control a road train and later with successful application of remote control to speed and movement of a switching locomotive. Thus far, in terminal applications, the French have perfected control of speed, forward and reverse operation and approach speed and have provided for instantaneous change-over from remote to manual operation. They're doing research now on development of electro-pneumatic brake equipment "which will probably bring a solution to the problem of deceleration of long trains."

D. M. Scher, director of research; and J. C. Blumstein, technical director, told RSPA members that control theory proved out in both road and yard tests. (In mainline running, "remote control performance was even better than manual control with an experienced engineer"—and yard control worked equally well. The French have had the test unit in operation for two years, have since added four additional remote controlled units for switching purposes.)

Additional research is being conducted now in remote control from the head end of a helper unit placed anywhere in the train—a project also in the developmental stage in the U.S.

Basic control device in the SNCF system is an electro-pneumatic servo mechanism controlling both the diesel power plant and the brake system and designed to be applied without any modification of the existing manual control equipment. The mechanism consists mainly of two automatic reduction valves, one for the engine and the other for the brakes. Use of compressed air for the actuating medium, the French researchers pointed out, "has proved to be especially flexible and offers definite advantages for such an application"—it's easy to supply on a locomotive, it offers the possibility of designing a simple and rugged equipment system.

Control of approach and coupling speed uses a special track circuit. An oscillation generator on the locomotive induces current in the rail. The length of track between the engine and the car it's approaching forms an oscillating circuit, the proper frequency of which is related to its length and is a function of the distance between locomotive and car. When this distance corresponds to the oscillator setting, the research team explained, the oscillator is brought into resonance with the track circuit and a relay is actuated. Two simultaneous actions occur: The locomotive is momentarily cut off from tower control; the speed control is set automatically to an approach speed of 1.3 mph. Then, as soon as coupling is completed, the unit is returned to radio control.

Paperwork simplification lacks some of the "glamour" attached to remote train control and automatic yard operation—but it's an operational area especially susceptible to improvements, such as those effected by B&LE and GN.

Simplification of interchange procedure on the Bessemer (first applied at Greenville, Pa., and later extended to three other points) uses a special wheel report prepared by the conductor, an overlay to convert the report to an acceptable interchange report and a copying machine to produce the required number of interchange documents. Advantages, according to Trainmaster J.R. McCormick, include a one-position reduction in the yard clerical force and better utilization of both the remaining yard force and the local agency force (which now executes the interchange).

W. P. Maloney, auditor of station and dining car accounts; and R. M. Barney, division station supervisor, outlined Great Northern's zone station accounting program (centralizing the bulk of station accounting at one point on each division). And Mr. Maloney touched on one of the basics (sometimes overlooked) in mechanization: That "if we merely set about to do by machines the same things we have always done manually, we will miss the point. We must begin by examining our past practices to see where we can eliminate unnecessary steps and avoid duplication of effort."

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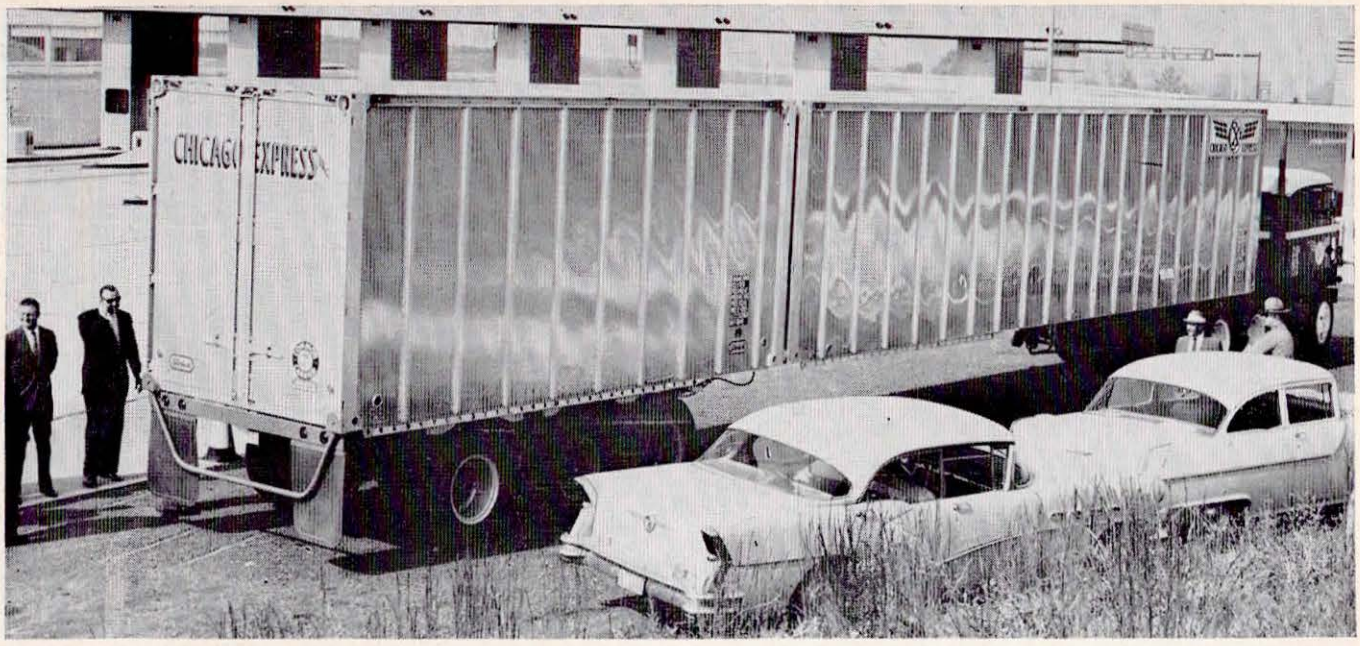
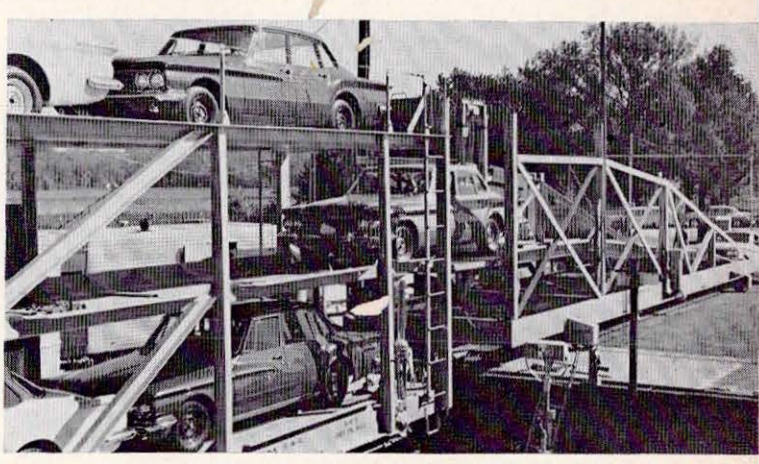
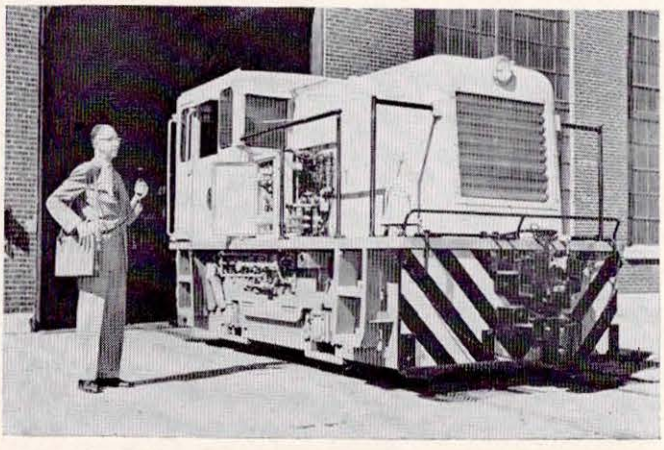


BIGGER THAN A BOX CAR, the "Strick Cruiser" is now operating on the Pennsylvania, Ohio and Indiana turnpikes between Philadelphia and Chicago (RA, Sept. 19, p. 7). The 60-ft units are broken into 40- and 20-ft trailers for off-turnpike pickup and delivery. The 60-ft units are the first trailers longer than 40 ft to be permitted in road use.

Pictures in the News This Week



FRISCO'S BOOMING AUTO TRAFFIC should reach 90,000 autos this year, up from 7,000 in 1958. This automatic elevating ramp plus 130 new tri-level auto flat cars will help the road handle even more autos next year, Frisco says.



AUTOMATIC DIESEL OPERATION, controlled remotely from the ground, was shown at the American Short Line meeting last week. General Electric says its new system should be ideal for short railroad switching service.

LABOR-MANAGEMENT COOPERATION is demonstrated for Reading President E. P. Gangewere by local chairmen C. T. Porr (right) and K. Myers (left). "Strike" on the poster refers to traffic-boosting matchbooks the unions sell.

You Ought To Know...

Consolidation of all railroad freight-handling operations and facilities in the Port of New York area has been suggested again. The Port of New York Authority has indicated willingness to study consolidation possibilities.

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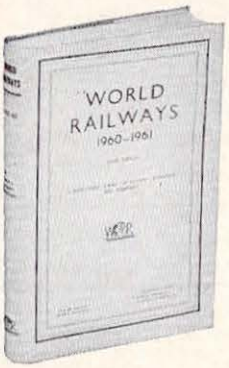

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You Can't Kid the Profs

Top officers of the five operating unions have initiated a program of contact with colleges, the most recent such session having been held at Cornell University (RA, Sept. 26, p. 64). Such an activity could be of great value to the unions and, in the long run, to management-union relations. A great deal depends upon the discernment with which the brotherhoods pursue their program.

When business managements, or unionists, or other groups, arrange these academic conferences, the general purpose can only be to discuss problems confronting the conferees—in an atmosphere of non-partisan detachment. An academic forum does not provide a setting favorable to inaccurate reporting. The profs are skilled critics—quick to detect distortions of fact, and to form sharp opinions regarding the integrity and intelligence of their visitors. Earning the good opinion of people of the caliber of university teachers is worth working for—because what these people think about your conduct and the goals you are striving for today, is likely to determine what the American people will be doing for (or to) your business, or your union, ten years hence.

The recent session at Cornell was, on the whole, maintained at a level of academic objectivity. A non-partisan atmosphere was established by incorporating addresses by a number of "outsiders"—including President Loomis of the AAR, Labor Secretary Mitchell, Congressman James Van Zandt, and several college teachers. There was also an address from a rather extreme unionist point of view by Chairman Leighty of the Railway Labor Executives Association; but objectivity in the discussion of the addresses and in summarizing the proceedings was assured by entrusting these assignments to college teachers.

Presentations by Mr. Loomis, Secretary Mitchell and Professor Robert Pashek were in rather close agreement on such matters as over-regulation of the railroads and promotional activities by government for the benefit of non-railroad types of transportation. Mr. Leighty, on the other hand, while saying that "railroad labor and railroad management do see eye to eye on the need for changes in our national transportation policy in certain areas," went on to assert that railroads are currently "enjoying the most prosperous period in their history."

"Over the last decade," he said, "railroad gross revenues have averaged more than $10 billion a year. That is almost double the gross revenues they had in 1921. In 1958, however, the purchasing power of the total compensation of railroad employees had risen only 8.6% over its 1921 level."

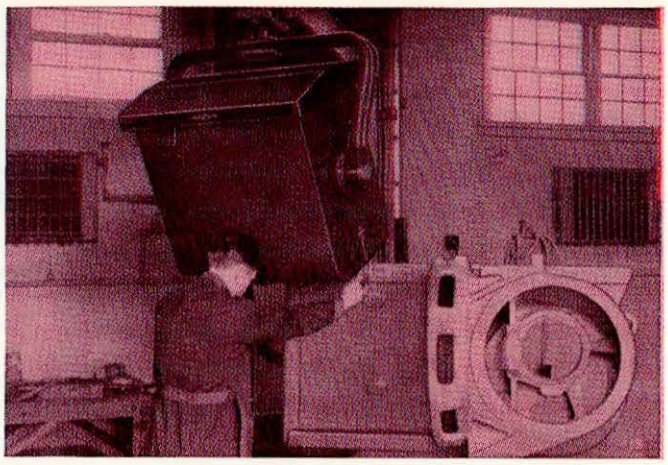
That statement ignores the inflation in the dollar when it reports railroad gross revenues, but uses a dollar deflated by its reduced purchasing power to report compensation of employees. Could Mr. Leighty expect that his academic listeners would fail to detect this shift in the yardsticks he was using?

The railroads' most prosperous pre-War II year was 1929, when their gross revenues were $6,280 million, and their net income was $897 million. In 1959, gross revenues were just short of $10 billion. In terms of 1929 "purchasing power," the railroads' 1959 net income was only $310 million, or hardly more than a third that of 1929, although investment in roadway and equipment, less depreciation, had increased by $4 billion.

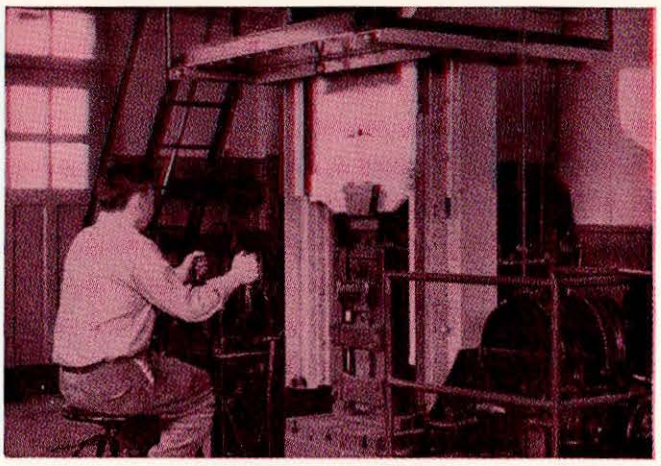
The railroad industry, in point of earnings in relation to investment, is the low man on the totem pole of all American industry—as is shown year after year in the annual tabulations by the First National City Bank of New York. In 1959, the railroads' return on their net assets was 3.5% (compared, for example, with 6.4% for air transportation, 9.7% for the utilities, and 9.8% for the manufacturing industry). Railroads are being starved for lack of an inflow of new capital, because investors find other investments so much more profitable.

Many people—on both management and union sides—believe railroads and unions should make common cause to solve their mutual problems. But no structure of cooperation can be built on a foundation of misinformation. Union contact with universities, we sincerely hope, will be continued and progressed—and could achieve the highly important goal of developing a basis of generally accepted facts and figures on which a structure of management-union collaboration could be built.

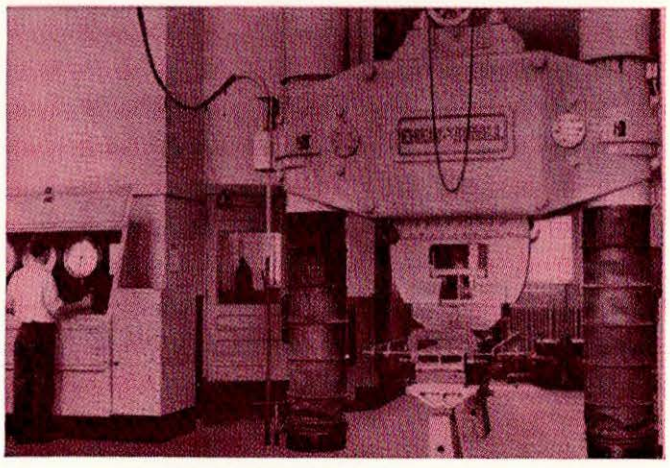
If any of the union leaders still believe, despite all evidence yet presented, that railroads are prosperous—then let them, at their college meetings hereafter, call on teachers of economics to give their unbiased opinions on the question.



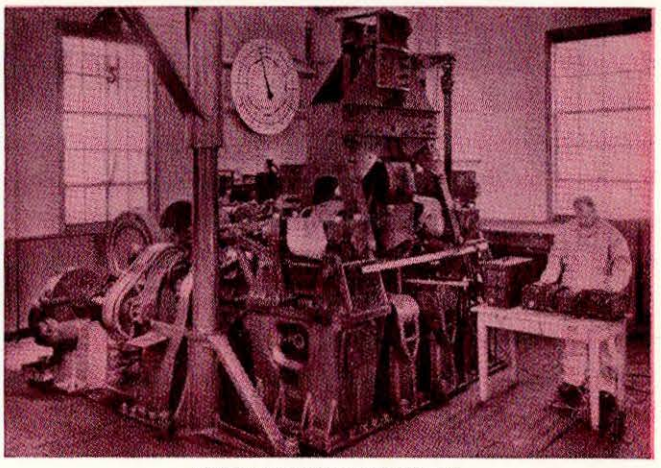
250 kvp industrial X-ray machine



Drop hammer dynamic test



One million pound hydraulic tension and compression testing machine



Fatigue testing a side frame

Tests like these assure you reliability in Symington railway products

Here you see some of the tests made by Symington to verify the reliability of its railway products. Equipment includes a million-pound tension-compression machine; a drop hammer for impact testing (at room or at subzero temperature); and a specially designed fatigue machine capable of imparting to side frames the equivalent of 20 years' operational stress in only a few days. In addition, a variety of nondestructive test apparatus is employed, including X-ray, Magnaflux, and car impact test plant to determine longitudinal shocks at various colliding speeds.

This emphasis on testing reflects Symington's conviction that its railway products are not simply castings, but components with definite functions to perform . . . and they must perform with reliability. This is why you can depend on Symington for premium quality in side frames, bolsters, couplers, yokes and related components.

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Frank E. Cheshire says:
"End use and continued use—
the twin requirements of
purposeful design."

"Purposeful design is not dictated alone by shipper requirements for end use.

"True, today's freight car components must adapt to modern lading, loading and storage methods, but in achieving these new purposes, International Steel has never sacrificed the precision construction which means *more* service at *less* maintenance cost!

"Whatever the end use of the freight car, its end *purpose* is net revenue.
So at International Steel, "purposeful design" means *continued* use as well as *end* use."

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